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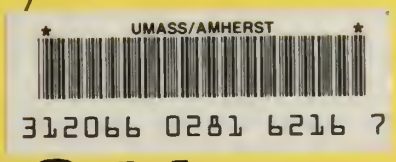

CTPS TECHNICAL REPORT 26

MBTA SYSTEMWIDE PASSENGER DATA COLLECTION PROGRAM VOLUME 1: Rapid Transit System

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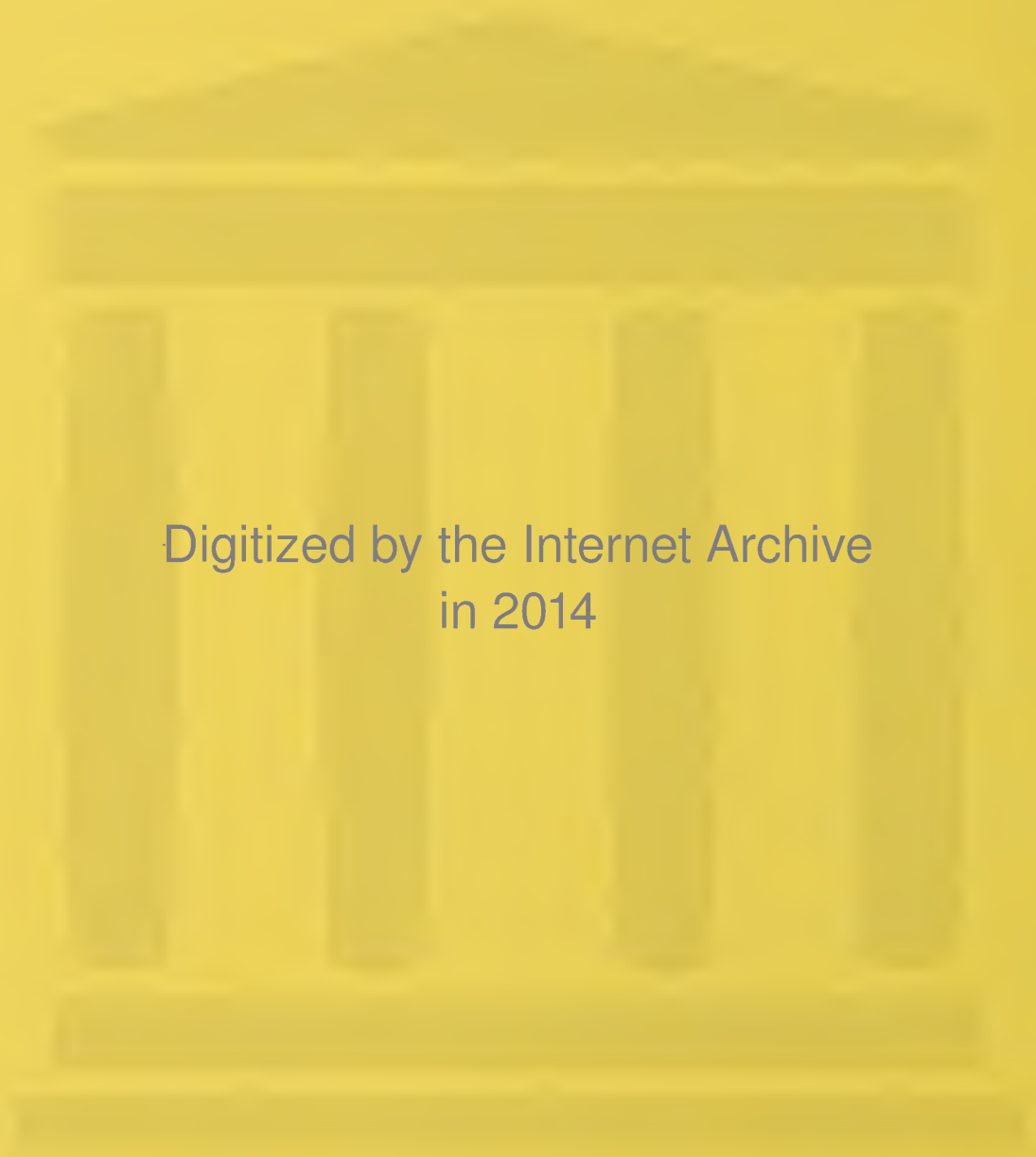

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BOSTON REGION

MBTA SYSTEMWIDE PASSENGER DATA COLLECTION PROGRAM

VOLUME 1

RAPID TRANSIT SYSTEM

APRIL, 1981

This document was prepared by CENTRAL TRANSPORTATION PLANNING STAFF, an interagency transportation planning staff created and directed by the Metropolitan Planning Organization, consisting of the member agencies.

Metropolitan Area Planning Council
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PREPARED FOR THE BENEFIT AND USE OF THE MUNICIPALITIES CONSTITUTING THE BOSTON METROPOLITAN AREA PLANNING DISTRICT

CTPS TECHNICAL REPORT 26

TITLE MBTA Systemwide Passenger Data Collection Program
Volume 1 - Rapid Transit System

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DATE April, 1981

ABSTRACT This is the first of two reports summarizing the results of information collected during a 1978 Systemwide Passenger Data Collection Program by the MBTA. This report focuses on the Rapid Transit portion of the system and describes (1) the physical system at the time of the survey, (2) procedures used to collect and process the data, (3) passenger boardings by corridor and by station, (4) socio-economic characteristics (age, sex, occupation, household size, household income, and auto ownership) of riders by corridor, and (5) travel characteristics (trip purpose, fare type, frequency of usage, mode of access and station destination) of riders by corridor.

A second report summarizing similar information for the bus portion of the system will be prepared as Volume 2.

Also, subsequent memoranda are expected to be prepared to document more detailed analysis of specific items of interest to the MBTA.

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CENTRAL TRANSPORTATION PLANNING STAFF 27 School Street, Boston, Mass. A Cooperative Planning Effort of MAPC, EOTC, MDPW, MBTA, MBTA ADV. BD., MASSPORT.

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PREFACE

This report is a summary document for the rapid transit portion of the MBTA Systemwide Passenger Data Collection Program. A similar summary document will be produced for the bus portion.

As this is a summary document, its approach is general and much of the reported data is at a fairly coarse level of aggregation. The data can be reported at more detailed levels, however. A series of CTPS memoranda is planned that will explore in finer detail the following topics:

- Submode of access
- Prepaid pass usage
- Trip purpose
- Transfer rates
- Temporal distribution of demand

I. INTRODUCTION

A. BACKGROUND AND PURPOSE

Since its creation, through Chapter 563 of the Acts of 1964, the Massachusetts Bay Transportation Authority (MBTA) has provided public transportation service to seventy-nine communities in the Boston metropolitan region. In order to provide this service in an effective and efficient manner, systemwide information concerning the number and characteristics of riders must be available.

Throughout its history, the MBTA has had an ongoing program for the collection of revenue data. In addition to this program, a variety of project-specific user surveys have also been conducted. However, no systemwide, comprehensive data collection effort has been undertaken since the so-called Postcard Survey portion of the Traffic and Transportation Inventory of 1963-1964.

In early 1976, representatives from several MBTA departments agreed that the available information on passenger and revenue characteristics for the total system--and its component parts--was not adequate for the current and the future needs of the Authority. It was, therefore, decided that an improved passenger data information system would be developed. An important first step in the implementation of such a passenger data information system is the establishment of a comprehensive and accurate baseline profile of ridership characteristics. The Systemwide Passenger Data Collection Program reported upon in this document was designed to provide such a baseline.

B. DESCRIPTION OF THE RAPID TRANSIT SYSTEM

Data collection activities were conducted at all fifty-eight of the rapid transit stations constituting the existing system and at fifty-five stops along the surface portion of the Green Line's Boston College, Cleveland Circle, and Riverside branches. While fifty-eight rapid transit stations were surveyed, the work was conducted at fifty-two locations, shown in Figure I-I, as six locations in Downtown Boston are serviced by two transit lines. In the following sections the rapid transit system is described by geographic corridor in terms of distance covered, station locations, communities serviced, running time to a centrally-located station within Downtown Boston, and basic fare structure (as of April 1978).

1. North Shore Corridor

Rapid transit service in the North Shore Corridor is provided by the Blue Line. Within the corridor, the Blue Line runs from Wonderland Station in Revere to Maverick Station in East Boston--a distance of 4.4 miles. The stations on the Blue Line within the

MBTA RAPID TRANSIT SYSTEM
STATION NAMES AND LOCATIONS
MBTA Rapid Transit Passenger Data Collection Program

FIGURE
I-1

corridor are Wonderland, Revere Beach, and Beachmont in Revere, and Suffolk Downs, Orient Heights, Wood Island, Airport, and Maverick in the East Boston section of Boston.

The scheduled running time from Wonderland Station to Government Center Station in Downtown Boston is approximately 18 minutes. The most heavily used stations in the corridor are Maverick, Orient Heights, and Wonderland.

The full fare between all points on the Blue Line was twenty-five cents for adults. A reduced fare of ten cents was charged to senior citizens, children under the age of twelve, and students in junior and senior high school. Transfer to the Green and Orange lines in Downtown Boston was free.

2. Northern Corridor

Rapid transit service in the Northern Corridor is provided by the northern portion of the Orange Line. The full Orange Line runs from Oak Grove Station in Malden--through Medford, Charlestown, Downtown Boston, the South End, and Roxbury--to Forest Hills Station in the Jamaica Plain section of Boston. Within the corridor itself, the stations on the Orange Line are Oak Grove and Malden Center in Malden, Wellington Station in Medford, and Sullivan Square and Community College in the Charlestown section of Boston. The distance between Oak Grove and Community College is 4.7 miles.

The scheduled running time from Oak Grove to State Station in Downtown Boston is approximately thirteen minutes. The distance between these stations is 5.9 miles. The most heavily used stations in the Northern Corridor are Sullivan Square and Wellington.

The full adult fare between all Orange Line stations from Wellington through Forest Hills, inclusive, was twenty-five cents. For senior citizens, children under the age of twelve, and students in junior and senior high school, a reduced fare of ten cents was in force. Between Oak Grove or Malden Center and all other stations of the Orange Line, the full fare was fifty cents for adults. The corresponding reduced fares for senior citizens was twenty-five cents and for children and junior and senior high school students the fare was ten cents. For local trips from Oak Grove to Malden Center or vice cersa, the adult full fare was twenty-five cents. Transfer to all connecting rapid transit lines was free.

3. Northwest Corridor

Rapid transit service in the Northwest Corridor is provided by the northern portion of the Red Line. In addition, grade-separated light rail service is provided by the Green Line Lechmere terminal.

At the time of data collection, the Red Line ran from Harvard Square in Cambridge, through Downtown Boston, to Columbia Junction in South Boston, where it divides into two branches, one running

to Ashmont Station in Dorchester and the other to Quincy Center Station in Quincy. (At present, the northern terminus is Harvard-Brattle Station, a temporary station opened in 1979 as part of the construction of an extension of the Red Line.) Within the corridor itself, the stations constituting the Red Line are Harvard, Central, and Kendall, all in the City of Cambridge. The distance between Harvard and Kendall stations is 1.9 miles.

The scheduled running time from Harvard Station to Park Street Station in Downtown Boston is approximately seven minutes. The distance between these stations is 3.2 miles. The most heavily used stations on the Red Line in the Northwest Corridor are Harvard and Central.

The full fare for adults between all stations on the Red Line, with the exception of stations along the Quincy Branch, was twenty-five cents. For the corresponding stations, the reduced fare for senior citizens, children under the age of twelve, and students in junior and senior high schools was ten cents. At stations along the Quincy Branch, an exit fare was also charged. Transfer from the Red Line to all other rapid transit lines was free.

The Northwest Corridor is also served by the Green Line's Lechmere terminal. The major component of the Green Line runs from Lechmere Station in East Cambridge into Downtown Boston. Within the downtown area, branches depart at Copley Junction to Arborway Station in Jamaica Plain and at Kenmore Station, where the main line splits into three branches, to Riverside Station in the City of Newton and to the Cleveland Circle and Boston College stations in the Brighton section of Boston.

The scheduled running time from Lechmere Station to Park Street Station in Downtown Boston is about ten minutes. This is a distance of 1.9 miles. Lechmere Station is one of the more heavily used stations in the MBTA system.

The full fare for adults between all stations on the Green Line from Lechmere to the first stop beyond the subway portal on all branches was twenty-five cents. The reduced fare for senior citizens, children under the age of twelve, and students in junior and senior high schools, for the corresponding section, was ten cents. An additional fare was collected for travel to points west or southwest of the subway portals. Transfer from the Green Line to all rapid transit lines was free.

4. Western Corridor

The Western Corridor is not served by any of the high-platform rapid transit lines. The corridor is served, however, by a portion of the light rail Green Line Central Subway and also by the three branches that continue west from the terminus of the Central Subway at Kenmore Square. The three branch lines have their outermost stops at Riverside Station in the City of Newton and at Cleveland Circle and Boston College in the Brighton section of Boston. These three lines converge underground

just west of Kenmore Station. From Kenmore Station, the Central Subway passes through Downtown Boston to its northern terminus at Lechmere Station in East Cambridge. The lengths of the three branches are as follows: Riverside to Kenmore--9.8 miles; Cleveland Circle to Kenmore--2.9 miles; Boston College to Kenmore--4.2 miles. The only station of the Central Subway in the Western Corridor is at Kenmore.

Of the three Green Line branches extending west from Kenmore Station, only the Riverside Line is entirely on an exclusive right-of-way. The branch is comprised of stations at Riverside, Woodland, Waban, Eliot, Newton Highlands, Newton Centre, and Chestnut Hill in the City of Newton; Reservoir, Beaconsfield, Brookline Hills, Brookline Village and Longwood in the Town of Brookline; and Fenway Park in the City of Boston.

The Cleveland Circle Branch of the Green Line runs in a median reservation along Beacon Street from Cleveland Circle to Saint Mary's Street, where it passes through the portal into the subway portion of the line. Cars on this branch make stops at Cleveland Circle in Brighton and at sixteen major street intersections in the Town of Brookline.

The Boston College Branch of the Green Line runs in a median reservation along Commonwealth Avenue from Boston College to Blandford Street, where it enters into the subway portion of the line. Cars on this branch stop at Boston College and at twenty-two major street intersections in the Allston and Brighton sections of Boston.

The scheduled running time from the terminus of each of the branches to Kenmore Station is as follows: Riverside to Kenmore--thirty minutes; Cleveland Circle to Kenmore--sixteen minutes; and Boston College to Kenmore--twenty-five minutes. The scheduled running time from Kenmore Station to the centrally-located Park Street Station in Downtown Boston is another ten minutes.

Kenmore Station is one of the more heavily used stations in the entire MBTA system. The most heavily used stations on the Riverside Branch are Riverside, Newton Center, Brookline Hills, Brookline Village and Fenway Park. Along the other two branches, the volume of passengers using any given stop is generally of a much smaller magnitude. On the Cleveland Circle Branch, the most heavily used stops are Cleveland Circle, Coolidge Corner, and St. Mary's Street. The most heavily used stops on the Boston College Branch are those located at Boston College, Harvard Avenue, and Blandford Street.

A zone fare system is employed on the Green Line. Between the portal stations of Fenway Park, St. Mary's Street, and Blandford Street and all stations of the Central Subway (Kenmore to Lechmere Station, inclusive), the full adult fare was twenty-five cents. For the same station grouping, the reduced fare for senior citizens, children under the age of twelve, and students in junior and senior high school was ten cents.

For local trips along the Riverside Branch--Riverside to Fenway Park stations, inclusive--fares were twenty-five cents for adults and ten cents for senior citizens, children, and secondary school students. For trips between points west of Fenway Park and points east of Fenway Park, the full fare was fifty cents for adults, twenty-five cents for senior citizens, and ten cents for children and secondary school students. Before June 1978, eastbound passengers paid the entire fare upon boarding. For trips in the reverse direction, westbound adults and senior citizens paid only the subway portion of the fare prior to boarding and then paid the surface portion when alighting. Children and secondary school pupils travelling westbound paid only when boarding, if they boarded in the subway, and only when alighting, if they boarded on the surface. Since June 1978, eastbound passengers have paid the full eastbound fare plus the equivalent of the surface portion of the westbound fare when boarding at a station to the west of Fenway Park. For the corresponding, but reversed, trip, passengers travelling westbound have paid only the subway portion of the fare when boarding in the subway and no fare when alighting at a surface stop.

For local trips from Cleveland Circle to St. Mary's Street, inclusive, on the Cleveland Circle Branch and from Boston College to Blandford Street, inclusive, on the Boston College Branch, the full adult fare was twenty cents and the reduced fare was ten cents for senior citizens, children, and secondary school students. For trips from points to the west of the St. Mary's Street and Blandford Street stops to stations in the subway, the fares were forty-five cents for adults, twenty cents for senior citizens, and ten cents for children and secondary school students. Passengers travelling eastbound paid the total fare upon boarding. When travelling westbound, passengers paid the subway portion before boarding and the surface portion at the time of alighting.

5. Southwest Corridor

Rapid transit service in the Southwest Corridor is provided by the southern portion of the Orange Line. There is, in addition, light rail service that is provided by the Arborway Branch of the Green Line.

The southern terminus of the Orange Line is at Forest Hills Station in the Jamaica Plain section of Boston. From Forest Hills the line runs northward through the Roxbury, South End, Downtown Boston, and Charlestown sections of Boston, into the City of Medford before reaching its northern terminus at Oak Grove Station in the Town of Malden. Within the Southwest Corridor, the stations that constitute the Orange Line are Forest Hills, Green Street, Egleston, and Dudley. The distance between Forest Hills and Dudley stations is 2.6 miles.

The scheduled running time from Forest Hills to the centrally-located Washington Station in Downtown Boston is approximately sixteen minutes. The distance between these two stations is 4.8 miles. The most heavily used Orange Line stations in the Southwest Corridor are Forest Hills and Dudley.

The full adult fare between all Orange Line stations from Forest Hills through Wellington, inclusive, was twenty-five cents. For the same segment, a reduced fare of ten cents was in force for senior citizens, children under the age of twelve, and students in junior and senior high school. Between all stations on the Orange Line from Forest Hills through Wellington and Malden Center or Oak Grove stations, the full adult fare was fifty cents. For comparable service, reduced fares of twenty-five cents and ten cents were offered to senior citizens and to children under the age of twelve and to junior and senior high school students, respectively. Transfer to all connecting rapid transit lines was free.

The Arborway Branch of the Green Line has its southern terminus at Arborway Station, adjacent to the Forest Hills Station of the Orange Line. From Arborway Station, the branch runs northward through the Jamaica Plain and Fenway sections of Boston before entering Downtown Boston. Within Downtown Boston, it joins the Central Subway of the Green Line at Copley Junction, a point between Copley and Auditorium stations. The distance from Arborway Station to Copley Junction is 4.6 miles.

From south to north, the Arborway Branch tracks run in street pavement, unseparated from general vehicular traffic, between Arborway and Brigham Circle. There are twenty on-street stops in this portion of the Arborway Branch. From Brigham Circle to Northeastern University, the tracks are in a median reservation along Huntington Avenue. There are eight reservation stops in the section between Brigham Circle and Northeastern. Beyond Northeastern, the branch is within subway in Downtown Boston. Cars normally terminate within Downtown Boston at either the Park Street or Government Center stations of the Central Subway.

The scheduled running time from Arborway Station to Park Street Station is thirty-one minutes. The distance between these two stations is 5.9 miles. The most heavily used stops on the surface portion of the Arborway Branch are Arborway, Heath Street, Brigham Circle, Longwood Avenue, and Northeastern University.

A zone fare system is employed on the Arborway Branch. Between the Northeastern University stop and all stations from Symphony eastward, the full adult fare was twenty-five cents. A reduced fare of ten cents was charged to senior citizens, children under the age of twelve, and students in junior and senior high schools for that same station grouping. A free transfer to all connecting rapid lines was provided.

For local trips within the Southwest Corridor between the Arborway and Northeastern Stations, the full adult fare was twenty cents. A reduced fare of ten cents was charged to senior citizens, children, and secondary school students.

For trips from points southwest of the Northeastern University stop to all stations in the subway, the full adult fare was forty-five cents, with a reduced fare of twenty cents for senior citizens

and a reduced fare of ten cents for children and secondary school students. Passengers travelling eastbound paid the total fare upon boarding. Passengers travelling westbound, however, paid only the subway portion of the fare before boarding and then paid the surface portion of their total fare when alighting.

6. South Shore Corridor

Rapid transit service in the South Shore Corridor is provided by the Dorchester Branch and the South Shore Branch of the Red Line. In addition, light rail service is provided by the Mattapan High Speed Line.

The Dorchester Branch of the Red Line has its southern terminus at Ashmont Station in South Dorchester. From Ashmont Station, the branch runs through the North Dorchester and South Boston sections of the City of Boston. At Columbia Junction, the Dorchester Branch merges with the South Shore Branch just before entering the subway portion of the line. The distance from Ashmont Station to Columbia Junction is 2.9 miles.

The South Shore Branch, which, at the time of the survey, began at Quincy Center Station (it now begins at South Braintree Station) also serves the corridor. This branch ran through the City of Quincy before joining the Dorchester Branch at Columbia Junction in South Boston. Trains from both branches continued through Downtown Boston before crossing into the City of Cambridge and terminating at Harvard Station (before the temporary Harvard/ Brattle Station opened in 1979). The distance from Quincy Center Station to Columbia Junction is 5.7 miles.

Two additional stations, Andrew and Broadway. within the subway portion constitute the Red Line Stem. These two stations serve the northernmost portion of the South Shore Corridor. The stations on the Dorchester Branch are Ashmont, Shawmut, Fields Corner, Savin Hill and Columbia. The stations on the South Shore Branch were Quincy Center, Wollaston, and North Quincy (and now the South Braintree Station as well).

The scheduled running time from Ashmont Station to Washington Street in Downtown Boston is about fourteen minutes. The distance between these two stations is approximately 5.6 miles. For the South Shore Branch, the scheduled running time from Quincy Center Station to Washington Station was about eighteen minutes. This is a distance of approximately 8.4 miles.

The most heavily used stations along the South Shore Branch are Quincy Center and North Quincy. The most heavily used stations along the Dorcehster Branch are Ashmont, Fields Corner, and Columbia. The two Red Line Stem stations, Andrew and Broadway, serve approximately the same number of passengers each day.

The adult full fare between all Red Line stations from Ashmont through Harvard, inclusive, was twenty-five cents. A reduced fare of ten cents for senior citizens, children under the age of twelve, and junior and senior high school students was in force for this same station grouping. A free transfer was available to all connecting rapid transit lines in Downtown Boston.

A zone fare system is in effect on the Red Line South Shore Branch. For trips between stations constituting the South Shore Branch and all other stations, the adult full fare was fifty cents. For the same stations, the senior citizen reduced fare was twenty-five cents and the reduced fare for children and secondary school students was ten cents. A free transfer was available to all connecting rapid transit lines. For local trips between South Shore Branch stations, the adult fare was twenty-five cents. A reduced fare of ten cents was charged to senior citizens, children, and secondary school students.

Light rail service is provided in the South Shore Corridor by the Mattapan High Speed Line. This service runs over an exclusive right-of-way from a station near Mattapan Square in the Mattapan section of Boston to a connection with the Dorchester Branch of the Red Line at Ashmont Station. Station stops are made at Capen Street, Valley Road, Central Avenue, and Milton (Adams Street) in the Town of Milton and at Butler Street and Cedar Grove in the South Dorchester/Lower Mills section of Boston. The overall distance of the line is 2.6 miles.

The scheduled running time between the Mattapan and Ashmont stations is ten minutes. The most heavily used station of the line is Mattapan Square.

The adult full fare was twenty-five cents between all stations on the Red Line, exclusive of those of the South Shore Branch. For these same stations, a reduced fare of ten cents was charged for senior citizens, children under the age of twelve, and students in junior or senior high school.

7. Downtown Boston

Rapid transit service in Downtown Boston is provided by portions of the Blue, Orange, and Red lines. Light rail service also is provided by the major portion of the Green Line Central Subway.

The Blue Line provides serivce within the Waterfront and Government Center districts of Downtown Boston. Stations on the Blue Line are Aquarium, State, Government Center, and Bowdoin, which is the southern terminus of the line. The distance between Aquarium and Bowdoin stations is 0.6 of a mile. The Blue Line connects with the Orange Line at State Station and with the Green Line at Government Center Station. A free transfer can be made at both of these points.

The Orange Line runs through the center of Downtwon Boston in a more or less north-south direction. The line directly serves the South End, Retail, Financial, Government Center, and North End districts. Stations are Northampton, Dover, Essex, Washington, State, Haymarket, and North Station. The distance between Northampton and North Station is 2.3 miles. The Orange Line connects with the Red Line at Washington Station, with the Blue Line at State Station, and with the Green Line at the Haymarket and North Station stations. A free transfer between

lines is possible at all four locations. While it is not in use at the time of data collection, a pedestrian tunnel, reopened in 1979, now connects Washington Station of the Orange Line with Park Street Station of the Green Line.

The Orange Line also interfaces with two other modes of public transportation service within the Downtown Boston area. At Haymarket and Washington stations, major tranfer movements can occur between express bus service from the North Shore and Northern corridors and the Western Corridor, respectively, and the rapid transit system. The second major mode transfer point is at North Station where transfer movements can occur between commuter rail service from the North Shore, Northern, and Northwest corridors and the rapid transit system. During the period of data collection, but no longer in effect, a free transfer was allowed between commuter rail and rapid transit (and the reverse).

The Red Line runs through the center of Downtown Boston as well, but in a more or less east-west direction, which brings it perpendicular to the Orange Line in the heart of the downtown area. As it traverses Downtown Boston, the Red Line provides service to the Waterfront, Financial, Retail, Beacon Hill, and Back Bay districts. Stations are South Station, Washington, Park, and Charles. The distance between South Station and Charles stations is 1.0 mile. The Red Line connects with the Orange Line at Washington Station and with the Green Line at Park Station. As previously described, a pedestrian tunnel now connects Washington Station (Orange Line level) with Park Street Station of the Green Line.

Similar to the Orange Line, the Red Line interfaces with two other modes of public transportation within Downtown Boston. A major transfer movement can occur at South Station between the rapid transit system and commuter rail service from the Western and Southwest corridors, with a free transfer allowed at the time of data collection. Also as previsouly noted, a major transfer movement between express bus service from the Western Corridor and the rapid transit system can take place at Washington Station.

The Green Line, through the Central Subway and the northern portion of the Arborway Branch, provides light rail service within the downtown area. The Green Line, similar to the Orange Line, traverses the center of Downtown Boston in a more or less north-south direction. Upon first entering the downtown area from the south and west, the two lines are roughly parallel and fairly well separated. They continue parallel, but draw much closer together, within the Retail district. Finally, they draw completely together and share two common station locations. In addition to the Retail district, the Green Line also serves the Back Bay, Government Center, and North End districts. Stations are Auditorium, Copley, Arlington, Boylston, Park Street, Government Center, Haymarket, North Station, and Science Park along the Central Subway. Stations of the Arborway Branch are Symphony and Prudential. The distance between Auditorium and Science Park stations is 2.7 miles. The distance from Symphony Station to Copley Junction is 0.6 of a mile.

The Green Line intersects each of the three rapid transit lines within Downtown Boston. It connects with the Red Line at Park Station, the Blue Line at Government Center Station, and the Orange Line at both the Haymarket and North Station stations. A free transfer between lines is possible at all four locations. As previsouly described, a pedestrian tunnel, closed at the time of data collection, now connects Park Street Station with Washington Station.

The interface with the northern commuter rail service at North Station, described for the Orange Line, also holds true for the Green Line. The transfer movement between bus service from the north and the rapid transit system which can occur at Haymarket Station, also covered within the Orange Line description, again holds true for the Green Line.

The scheduled running time between Aquarium and Bowdoin stations of the Blue Line in Downtown Boston is approximately three minutes. The most heavily used station is State. The scheduled running time between Northampton and North Station stations of the Orange Line is approximately ten minutes. The most heavily used stations are Washington and State. For the Red Line, the scheduled running time in Downtown Boston is approximately three minutes between South Station and Charles stations. The most heavily used stations are South Station, Washington, and Park Street. The scheduled running time for the portion of the Central Subway of the Green Line within Downtown Boston is approximately sixteen minutes between Auditorium and Science Park stations. For the portion of the Arborway Branch, the scheduled running time between Symphony Station and Copley Junction is approximately four minutes. The most heavily used stations are Copley, Arlington, and Park of the Central Subway. Both Symphony and Prudential stations of the Arborway Branch serve the same, relatively low, magnitude of riders.

The fare system within Downtown Boston is the same for all the lines serving the area. The adult full fare was twenty-five cents. For senior citizens, children under the age of twelve, and students in junior or senior high school, a reduced fare of ten cents was in force. For cases where trips were made by passengers along lines using a zone fare system--the Green Line in the Western Corridor, the Orange Line in the Northern Corridor and the Red Line South Shore Branch in the South Shore Corridor--the additional fare was collected at the point of alighting. In the case of the Green Line, this has already been covered in description for the Western Corridor. For both the Orange Line and Red Line, the adult full fare was an additional twenty-five cents. Senior citizens, children, and secondary school students paid an appropriate reduced fare. Transfers between all lines in Downtown Boston were free.

C. BRIEF DESCRIPTION OF THE DATA COLLECTION PROGRAM

Once the decision was made to embark on a systemwide data collection effort, the next step was to develop a method for carrying it out. The data collection plan was completed in July

of 1977. A consultant selection process was then initiated that led to the selection of the firm of Wilbur Smith and Associates (WS&A) as prime contractor and the firm of Jack Bryand and Associates as a subcontractor in charge of field data collection.

Due to the differences between the rapid transit and bus portions of the MBTA system, different survey methods were developed for the collection of data. Primarily for manpower reasons, the collection of data on each component was temporally separated. The decision was then made to complete the rapid transit surveying before undertaking any of the bus surveying.

The rapid transit data collection commenced on April 3, 1978. The major portion of this work was completed by April 26, 1978. Cleanup operations, in the form of recounts at specific stations, were required for various reasons. These counts were begun almost immediately (April 28) and were not completed until near the end of June.

Upon completion of the data collection, the raw data was given to the Central Transportation Planning Staff (CTPS) for data reduction and computer processing. The resultant output from the reduction and processing of the rapid transit portion of the data by the CTPS forms the subject of this report.

II. DATA COLLECTION AND REDUCTION PROCEDURES

A. INTRODUCTION

Work on the Systemwide Passenger Data Collection Program was initiated in February, 1978. A series of meetings were held which were attended by key personnel from the consultant team and from the several departments within the Authority that would directly use the passenger data. The outcome of these meetings was agreement concerning the basic requirements for data gathering, including the methods to be followed for obtaining control passenger count totals; for circulating and retrieving the passenger survey questionnaires; and for the contents of the survey instrument itself. It was further agreed that data would be collected on the rail rapid transit system first and on the bus system immediately thereafter.

As the date for the commencement of the field data collection approached, an extensive campaign to educate the riding public about the survey project was undertaken. Some general publicity was obtained through newspapers, radio, and television, but the major thrust was in a series of transit vehicle cards and posters and signs in rapid transit stations. These reminded transit riders that survey forms should be accepted, completed, and returned. It was hoped that the best possible response from transit riders would result from this form of campaign.

B. DATA COLLECTION PROCESS

Two basic types of information were collected, which, when taken together, provide a description of the usage of the MBTA rapid transit system for a composite April 1978 day. Passenger boarding counts, obtained as riders entered stations, provide an estimate of the total universe (number) of people using the system on a given day. The results from the passenger questionnaire survey provided a "snapshot" of the socio-economic and travel characteristics of those riders who returned usable survey forms. The results from the passenger questionnaire survey were then extrapolated across the total riding public to obtain an estimate of socio-economic and travel characteristics for all riders.

The collection of count and survey data commenced on Monday, April 3, 1978, for stations of the Blue Line. Data collection for stations of the Orange Line followed on Tuesday and Wednesday, April 4 and 5. The work then proceeded through the stations of the Red and Green line and finally, on April 26, the six major transfer stations located in Downtown Boston. The initial phase of this work was concluded on April 26, but short "fill-in" counts were taken at various stations throughout May and June. At all stations, counts were taken and questionnaires were distributed between the hours of 6:00 A.M. and 12:00 midnight.

The order in which data collection proceeded was based on the theory that it was best to first cover stations on the more lightly travelled lines, where the work effort was most straight-forward and perhaps less overwhelming in terms of the magnitude of data to be collected. A working knowledge was thus gained at these stations before the effort moved on to the more heavily used lines and stations with the most complex stations--Government Center, Haymarket, North Station, Park, State, and Washington -- tackled last.

As an outcome of this temporal spread of data collection activity, the rapid transit operation results obtained are that for a "composite" survey day in April 1978, as opposed to a specific day of operation. Also, while data was collected over eighteen consecutive hours each day, the system actually operated for 20 hours, starting one hour before and ending one hour after the data collection activities. This data collection methods has some effect on the results, as discussed in subsequent sections of this report.

1. Passenger Count Procedure

The basic data collected were control counts of passengers entering the rapid transit system at station turnstiles and directional boarding and alighting counts performed on station platforms. The boarding counts were subdivided into cash-fare passengers and prepaid-pass users. The passholder usage figures mark the first comprehensive count of prepaid-pass use.

a. PURPOSE OF PASSENGER COUNTS

The passenger counts are a valuable source of primary data at the station level and, when aggregated, at the systemwide level as well. They also provide the means by which the passenger survey results are expanded to estimate total transit riding activity.

b. METHOD OF DATA COLLECTION

Turnstile and passgate counts were obtained for each fifteen-minute interval of the composite survey day. Turnstile counts were taken by direct reading from the turnstile meters by members of the field crew. Passgate counts were obtained by direct observation of people passing through these gates by members of the field crew. These data, which together form a complete record of passengers entering the transit system at each station, were recorded onto the so-called R-1--Turnstile Reading and Passgate Counts--form. A copy of this form is presented in Figure II-1. This information is non-directional. These counts are felt to be the most accurate of all data collected and provide a control total for all activity at stations where transfer between lines or portions of lines does not occur.

Passenger platform counts were also manually recorded from direct observation by field crew members. These data were recorded onto so-called R-2--Platform Counts--form. A copy of this form is depicte in Figure II-2.

R-1 TURNSTILE READINGS AND PASSGATE COUNTS

TEL: 482-2886
423-3939

STATION _____ ☐☐☐ NAME _____

TURNSTILE LOCATION _____ TIME _____ A.M. P.M. DATE _____

METER NO.	READING :00	READING :15	READING :30	READING :45	READING :00	NOTES

PASS GATE T/S						

COIN BOX #							
	P						
	N						
	D						
	Q						

R-1, TURNSTILE READINGS AND PASSENGER COUNTS, FORM
PASSENGER COUNT PORTION
MBTA Rapid Transit Passenger Data Collection Program

FIGURE
II-1

Tel: 482-2886
423-3939

R-2 Platform Counts

Station _____ ☐☐ Name _____ Date _____

Inbound from _____ (previous station) Outbound To _____ (next station)

Hour	Persons Boarding				Persons Alighting				NOTES
	:00- :15	:15- :30	:15- :45	:45- :00	:00- :15	:15- :30	:30- :45	:45- :00	

R-2, PLATFORM COUNTS, FORM
PASSENGER COUNT PORTION
MBTA Rapid Transit Passenger Data Collection Program

FIGURE
II-2

The platform counts were recorded at the time that a train entered or left a station. They are, therefore, directional. They have been summarized into fifteen-minute periods for direct comparison (compatability) with the R-1 data. Because these counts were done entirely "by eye", the R-2 figures, as taken directly from field sheets, tend to be somewhat more spotty than the R-1 counts. Where discrepancies occurred between the R-1 and overall R-2 values, the R-1 information was favored during data editing.

For the surface portion of the Green Line, a modified method of data collection, replacing the R-1 and R-2 counts, was employed during the evening period of the day. Because of the relatively light usage of these lines and the frequent number of stops ("stations"), the station was replaced as the focal point for counting. Field crew members rode the light-rail cars to collect count data comparable to that collected at stations for the remainder of the system. Boardings and alightings were manually recorded at the time that they occurred. These data are, therefore, directional and have been summarized into fifteen-minute periods for comparison (compatability) with all other count data. The so-called R-4--On-Board Counts--form was utilized in this work. This form is shown in Figure II-3.

2. Passenger Survey Procedure

The basic data collected in the passenger survey portion of the work effort were completed questionnaire forms filled out by members of the travelling public.

a. PURPOSE OF THE PASSENGER SURVEY

The passenger survey provides data on the attributes of selected riders, from which an estimate of the characteristics of the general riding public can be drawn. The questionnaire was designed to elicit information concerning travel purpose, travel pattern (in terms of origin and destination), travel method (in terms of access, egress, and transfer rates), travel frequency, and the socio-economic characteristics of the travelling public.

b. METHOD OF DATA COLLECTION

At each station, survey questionnaires were distributed to passengers as they entered the system during the same eighteen-hour time period as that in which passenger counts were being taken. Field crew members were told to distribute as many questionnaires as as possible, but no more than one to any single rider. Questionnaire forms in Spanish were made available in stations serving the South End district of Downtown Boston, where many riders are from the Spanish-speaking community. Copies of the so-called MBTA Passenger Survey form is presented in Figures II-4 and II-4A (Spanish version).

Passengers were urged to take, complete, and return a questionnaire. Within the transit system, large cardboard boxes were placed within transit stations where passengers could leave forms after completing them. Field crew members were also instructed to accept forms as they were completed. The questionnaire forms bore prepaid postage and could be returned through the mail as well.

R-4 Form
Surface Green Line P.M. Counts
Date_____Terminal_____

Route #

Run #							
Farebox #							
Out Bound							
Time Begin							
Fare Box	Cash						
	Pennies						
Questionnaire#							
Time End							
Fare Box	Cash						
	Pennies						
Questionnaire#							
Total Boardings							

Route #

Run #							
Farebox #							
In Bound							
Time Begin							
Fare Box	Cash						
	Pennies						
Questionnaire#							
Time End							
Fare Box	Cash						
	Pennies						
Questionnaire#							
Total Boardings							

R-4, SURFACE GREEN LINE P.M. COUNTS, FORM
PASSENGER COUNT PORTION
MBTA Rapid Transit Passenger Data Collection Program

FIGURE II-3

M.B.T.A. PASSENGER SURVEY

№ 60807

DO NOT WRITE IN THIS SPACE
OFFICE USE ONLY

Please COMPLETE and RETURN this questionnaire before leaving the subway. This survey is being conducted for the MBTA in order to plan for better service. Your cooperation is appreciated. Please drop your questionnaire in the box when you leave the station. If this is not convenient, drop it in any mailbox (we will pay the postage). It is NOT necessary to sign this form or otherwise identify yourself.

1. Where did you come from before arriving at this station? __Home __School __Work __Shopping __Medical/Dental __Social/Recreation __Other
   The place you came from is located at: Address [ ] NUMBER [ ] STREET (or nearest intersection, store, school, etc.) [ ] TOWN OR CITY
2. How did you get to this station? __Walked __Drive car __Ride in car __Taxi __Commuter train __Bus or Streetcar
   Which bus or streetcar? ______
3. If you arrived by car, was the car: __Parked on street __Parked in lot or garage __Not parked
4. Which subway line will you be boarding at this station? __Blue __Orange __Red __Green
5. If you transfer to another subway line, at what station will you transfer? __North Station __Haymarket __Park __Government Center __State __Washington __Other
6. What type of fare did you pay at this station? __Elderly ½ fare __Handicapped ½ fare __Student ½ fare __Student transfer __Adult cash fare __Pre paid pass __Other
7. At what station will you finally get off? Name of station ______
8. Where will you go when you leave the station? __Home __School __Work __Shopping __Medical/Dental __Social/Recreation __Other
   The place you will go is located at: Address [ ] NUMBER [ ] STREET (or nearest intersection, store, school, etc.) [ ] TOWN OR CITY
9. How will you get to your destination after leaving the subway? __Walk __Drive car __Ride in car __Taxi __Commuter train __Bus or Streetcar
   Which bus or streetcar? ______
10. How often do you ride the subway? __Once per week or less __2-3 times weekly __4-5 times weekly __More than 5 times weekly
11. In the last 2 years has your use of the subway __Increased __Decreased __Stayed the same
12. Are you __Grade school or High school student __College student __Housewife __Retired __Employed __Unemployed
13. Are you __Male __Female
14. What is your age? __Under 16 __16-24 __25-44 __45-59 __60-64 __65 or older
15. How many persons (including yourself) live in your household? __One __Two __Three __Four __Five __Six or more
16. Does your household have? __No cars __One car __Two cars __Three or more
17. Do you have a driver's license? __Yes __No
18. How many other members of your household have a driver's license? __One __Two __Three __Four or more
19. What is the combined annual income of your entire household? __Under $5,000 __$5,000 to $8,000 __$8,000 to $12,000 __$12,000 to $15,000 __$15,000 to $20,000 __$20,000 to $25,000 __Over $25,000
20. Comments and suggestions ______

MBTA PASSENGER QUESTIONNAIRE FORM
PASSENGER SURVEY PORTION
MBTA Rapid Transit Passenger Data Collection Program

FIGURE II-4

Nº / 1734

Favor de completar este cuestionario antes de salir del "subway" y deposítelo en un lugar apropiado. Hay urnas en cada estación donde debe depositar el cuestionario luego de completarlo. Si no le es posible dejarlo en la estación, deposítelo en cualquier buzón. La MBTA pagará el franqueo. No es necesario firmar el cuestionario ni identificarse de ninguna forma. La MBTA utilizará los resultados de esta encuesta para planificar un mejor servicio de transporte. Gracias. Agradecemos su cooperación.

1. ¿En qué lugar estuvo Ud. antes de llegar a esta estación? ___Su casa ___La escuela ___El trabajo ___De compras ___Cita médica o dental ___Visita social/recreación ___Otra actividad

¿Cuál es la dirección de este lugar?

8 NUMERO 11 12 CALLE (o intersección, tienda, escuela, etc.) 32

33 PUEBLO O CIUDAD 46

2. ¿Cómo llegó Ud. a esta estación? ___A pié ___Manejando un carro ___Como pasajero en un carro ___Taxi ___Tren de B&M ___Guagua (bus) o tranvía ¿En qué guagua (bus) o tranvía? _____

3. Si vino en carro, ___¿Lo estacionó en la calle? ___¿Lo estacionó en un garage o solar de estacionamiento? ___¿No lo estacionó?

4. ¿Qué línea de tren abordará Ud. en esta estación? ___Azul ___Naranja ___Roja ___Verde

5. ¿Si transfiere a otra línea, en qué estación cambiará de tren? ___North Station ___Haymarket ___Park St. ___Government Center ___State ___Washington ___Otra

6. ¿Qué tipo de tarifa pagó Ud. en esta estación? ___Media tarifa anciano ___Media tarifa incapacitado ___Media tarifa estudiante ___Boleto de transferencia para estudiantes ___Pase pagado de antemano ___Tarifa completa en efectivo ___Otra

7. ¿En qué estación se bajará finalmente? Nombre de la estación _____

8. ¿A dónde irá cuando salga de la estación? ___A su casa ___A la escuela ___Al trabajo ___De compras ___Cita médica o dental ___Actividad social o recreativa ___Otra

¿Cuál es la dirección de este lugar?

8 NUMERO 11 12 CALLE (o intersección, tienda, escuela, etc.) 32

33 PUEBLO O CIUDAD 46

9. ¿Cómo llegará a su destinación después de salir de la estación? ___A pié ___Manejando un carro ___Como pasajero en un carro ___Taxi ___Tren de B&M ___Guagua (bus) o tranvía ¿En qué guagua (bus o tranvía?) _____

10. ¿Con qué frecuencia usa Ud. el tren subterráneo? ___Una vez por semana o menos ___2 3 veces por semana ___4 5 veces por semana ___Más de 5 veces por semana

11. En los últimos dos años su uso del tren subterráneo ha: ___Aumentado ___Disminuído ___Permanecido igual

12. ¿Es Ud. ___Estudiante escolar ___Estudiante Universitario ___Ama de casa ___Retirado ___Empleado ___Desempleado?

13. ¿Es Ud. ___Hombre ___Mujer?

14. ¿Cuál es su edad? ___Menos de 16 años ___16 25 años ___26 44 años ___45 59 años ___60 64 años ___65 años o mayor

15. ¿Cuantas personas (incluyéndose a sí mismo) viven en su casa? ___1 ___2 ___3 ___Más de 3

16. ¿Cuántos carros operables hay en su casa? ___Ninguno ___1 ___2 ___3 ___Más de 3

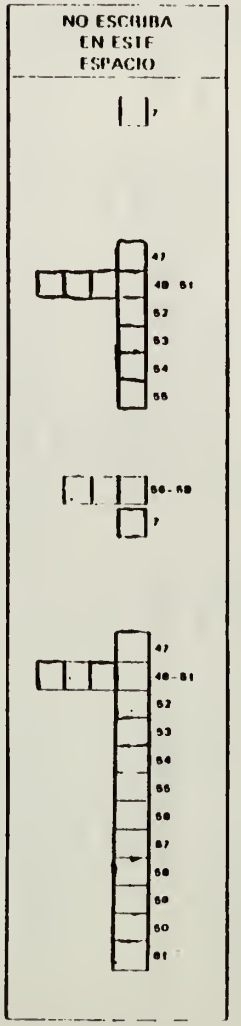
17. ¿Tiene Ud. licencia de conducir? ___Sí ___No

18. ¿Cuántas personas más tienen licencia de conducir en su casa? ___1 ___2 ___3 ___Más de 3

19. ¿Cuál es el ingreso combinado de todos los que viven en su hogar? ___Menos de $5,000 ___$5,000 $8,000 ___$8,000 $12,000 ___$12,000 $15,000 ___$15,000 20,000 ___$20,000 $25,000 ___Más de $25,000

20. Comentarios y Sugerencias _____

NO ESCRIBA EN ESTE ESPACIO



MBTA PASSENGER QUESTIONNAIRE FORM (SPANISH VERSION)
PASSENGER SURVEY PORTION
MBTA Rapid Transit Passenger Data Collection Program

FIGURE II-4A

A record was kept by a field crew member at each station of the serial-numbered questionnaire forms that were distributed at that station during each of the fifteen-minute time intervals composing the eighteen-hour survey day. This information was recorded on the so-called R-3--Rail Questionnaire Tally Sheet--form shown in Figure II-5.

During the data collection period, a grand total of 171,018 survey forms were distributed to passengers as they entered stations of the Blue, Orange, and Red lines, and entered stations or boarded cars of the Green Line. The distribution of these survey questionnaires by hour and line is presented in Table II-1. The largest number of questionnaries was distributed during the hour of 8:00-9:00 A.M., when over 23,500, or 13.8 percent, of all distribution questionnaires were handed out. The next highest hourly total was that for the 7:00-8:00 A.M. hour, when approximately 20,000 questionnaires were passed out. In the afternoon the highest hourly total was only about 15,400 forms distributed during the 4:00-5:00 P.M. hour. This represents 9.0 percent of the daily total. The 3:00-4:00P.M. and 5:00-6:00 P.M. hours, both with just over 12,000 forms distributed, each accounted for 7.1 percent of the daily total.

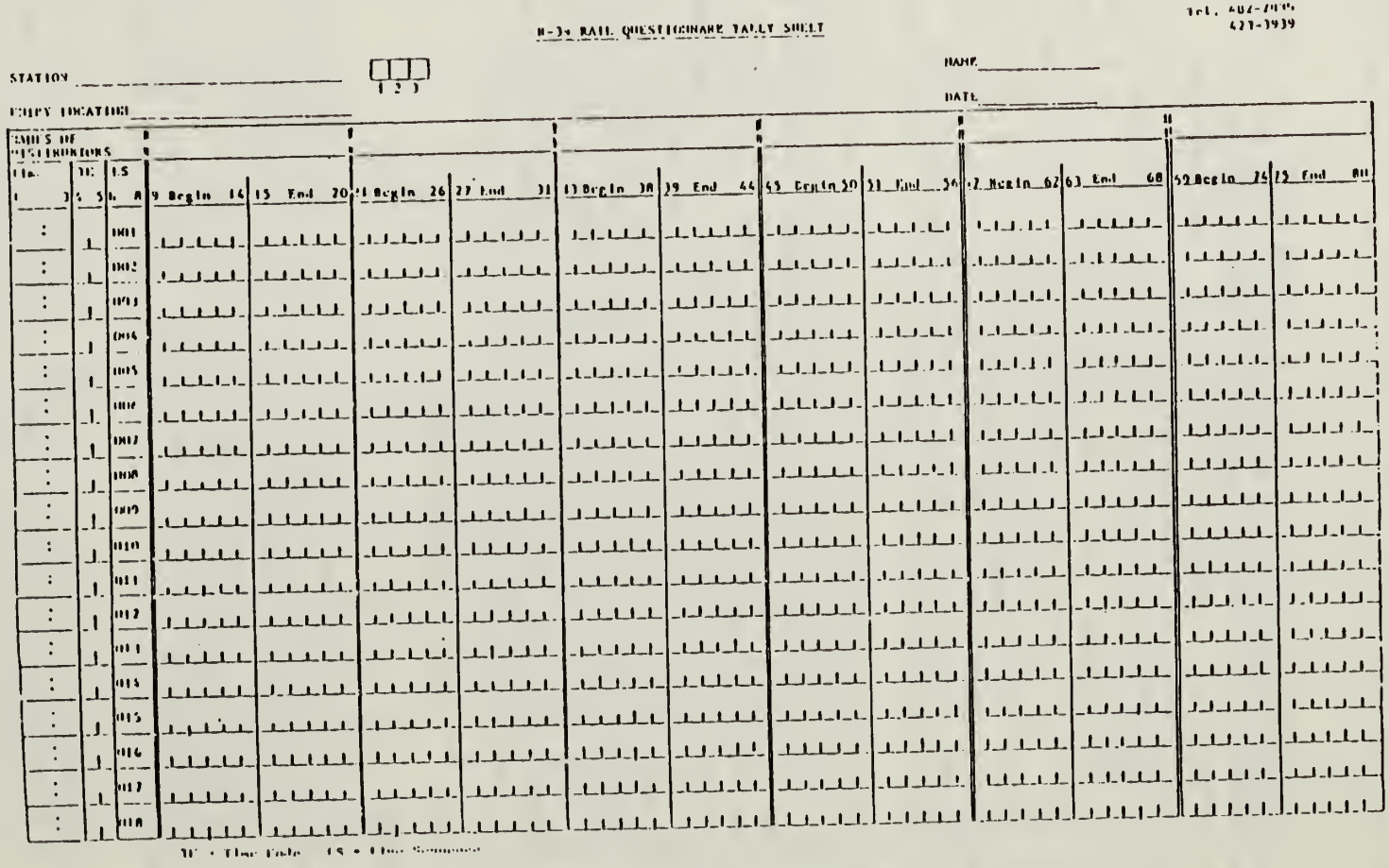
The tabulated distribution given in Table II-1 shows that on each line the largest distribution of questionnaires occurred between 7:00 and 9:00 A.M. For the Orange Line, Red Line, and Blue Line, the percentages are 39, 32, and 27, respectively. The Green Line, which maintains heavier loadings during off-peak hours than do the other lines, accounts for the lowest percentage, at 19 percent, of questionnaires distributed during the peak morning hours. For the transfer stations in Downtown Boston, the maximum number of questionnaires distributed in a one-hour period was just under 4,500, or about 16 percent during the 4:00-5:00 P.M. hour. Together, the 4:00-5:00 P.M. and 5:00-6:00 P.M. hours account for about 8,500 distributed questionnaires at the transfer stations. This is 29.5 percent of all questionnaires distributed at these stations.

c. RESPONSE TO THE PASSENGER SURVEY

- Summary

A total of 47,717 questionnaires, of the 171,018 distributed, were returned in a condition suitable for initial data processing. From this 47,717 total, a preliminary data file, containing 39,629 records, was created. The results presented througout this report are taken from this preliminary data file. The 39,629 records represent a 23.2 percent return of distributed forms. However, this figure also represents a return from only 10.7 percent of all boarding passengers.

The statistics by line tend, as shown in Table II-2, to be quite similar. Return percentage based on distributed forms were 26.2, 25.9, 24.8, and 21.2 for the Green, Red, Blue, and Orange lines, respectively. Related percentages based on all boarding passengers were 14.7, 13.4, 12.6, and 10.9 for the Blue, Red, Green, and Orange lines, respectively. The movement in positions in the rankings invovles only a first and third place shifting between the Blue and Green lines. By comparison, the percentage returns for



R-3 RAIL QUESTIONNAIRE TALLY SHEET

Tel. 482-7810
423-3939

STATION _____ (1 2 3)

NAME _____

DUTY LOCATION _____

DATE _____

Line	TC	LS		9 Begin 14	15 End 20	21 Begin 26	27 End 31	33 Begin 38	39 End 44	45 Begin 50	51 End 56	57 Begin 62	63 End 68	69 Begin 74	75 End 80
:			0001												
:			0002												
:			0003												
:			0004												
:			0005												
:			0006												
:			0007												
:			0008												
:			0009												
:			0010												
:			0011												
:			0012												
:			0013												
:			0014												
:			0015												
:			0016												
:			0017												
:			0018												

TC = Time Code LS = Line Segment

R-3, RAIL QUESTIONNAIRE TALLY SHEET, FORM
PASSENGER SURVEY PORTION
MBTA Rapid Transit Passenger Data Collection Program

FIGURE
II-5

RAIL PASSENGER SURVEY FORMS DISTRIBUTED BY HOUR AND TRANSIT LINE

M.B.T.A. Passenger Date Study

	TRANSIT LINE											
	Orange		Red		Blue		Green		Downtown Station		TOTAL	
HOUR BEGIN	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
6:00 A.M.	1,053	3.6	2,195	4.2	513	4.0	1,170	2.5	188	0.7	5,119	3.0
7:00 A.M.	5,292	18.1	7,732	14.6	1,668	12.8	4,024	8.5	1,349	4.7	20,065	11.7
8:00 A.M.	6,043	20.7	9,204	17.4	1,903	14.6	5,033	10.7	1,357	4.7	23,540	13.8
9:00 A.M.	2,049	7.0	4,577	8.7	1,226	9.4	2,955	6.2	923	3.2	11,730	6.9
10:00 A.M.	972	3.3	1,819	5.8	724	5.6	2,496	5.3	1,248	4.3	8,479	5.0
11:00 A.M.	838	2.9	3,521	6.7	576	4.4	2,348	5.0	1,956	6.8	9,239	5.4
12:00 Noon	1,016	3.5	3,259	6.2	471	3.6	2,738	5.8	2,115	7.4	9,591	5.6
1:00 P.M.	1,488	5.1	2,833	3.8	507	3.9	3,056	6.5	1,714	6.0	8,798	5.1
2:00 P.M.	1,442	4.9	2,118	4.0	528	4.8	2,799	5.9	2,864	7.2	8,943	5.2
3:00 P.M.	1,852	6.3	2,948	5.6	641	4.9	3,764	8.8	2,911	18.1	12,188	7.1
4:00 P.M.	2,145	7.3	4,824	7.6	679	5.2	4,847	8.6	4,494	15.6	15,389	8.8
5:00 P.M.	1,185	3.8	2,183	4.1	1,244	9.6	3,666	7.8	4,888	13.9	12,286	7.1
6:00 P.M.	1,125	3.9	1,257	2.4	235	1.8	1,965	4.2	1,586	5.2	6,888	3.6
7:00 P.M.	575	2.8	1,336	2.5	816	6.3	2,421	5.1	938	3.3	6,888	3.6
8:00 P.M.	386	1.3	768	1.4	471	3.6	1,498	3.1	683	2.1	3,718	2.2
9:00 P.M.	376	1.3	929	1.8	483	3.1	1,437	3.8	482	1.7	3,627	2.1
10:00 P.M.	291	1.8	623	1.2	138	1.8	1,891	2.3	355	1.2	2,498	1.4
11:00 P.M.	364	1.2	685	1.3	28	0.2	652	1.4	276	1.8	2,885	1.2
12:00 Midnight	829	2.8	395	0.7	265	2.8	48	0.1	266	0.9	1,883	1.8
TOTAL	29,241	188	52,818	188	13,828	188	47,194	188	28,753	188	171,818	188

SOURCE: Survey Data.

RAIL PASSENGER SURVEY FORMS DISTRIBUTED
BY HOUR AND TRANSIT LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

TABLE
II-1

LINE	TOTAL BOARDING	QUEST. DISTRIB.	QUEST. RETURNED	RETURN AS PERCENT OF DISTRIBUTED	RETURN AS PERCENT OF BOARDING
Orange	57,022	29,241	6,202	21.2	10.9
Red	102,309	52,810	13,684	25.9	13.4
Blue	21,958	13,020	3,226	24.8	14.7
Green	98,129	47,194	12,376	26.2	12.6
Downtown Transfer Stations	90,038	28,753	4,141	14.4	4.6
TOTAL	369,456	171,018	39,629	23.2	10.7

RAIL SURVEY QUESTIONNAIRES
TOTAL BOARDINGS VERSUS DISTRIBUTED AND RETURNED FORMS
PASSENGER SURVEY PORTION
[illegible] Transit Passenger Data Collection Program

TABLE II-2

survey forms distributed at Downtown Transfer Stations were only 14.4 percent of distributed forms and 4.6 percent of all boarding passengers. The percentage of all boarding passengers returning computer processable forms is the significant measure, because it directly leads to the expanded survey results, i.e., the estimate of characteristics for all riders.

One explanation put forth for the low 4.6 returns per 100 boarding passengers at Downtown Transfer Stations (which probably came about through a combination of a low return of distributed forms and a low acceptance rate of questionnaires in the first place) is that many passengers boarding in the downtown area had received a survey questionnaire on their previous (presumable inbound) trips. These riders, therefore, felt that the reporting of their return trip was not important. Whatever the reason, the reporting of trips made by passengers boarding at Downtown Transfer Stations--trips and boardings which lie heavily within the afternoon peak period of travel--are markedly under-reported in the preliminary data file.

- Systemwide

A total of 171,018 passenger survey questionnaires were distributed to the 369,456 entering passengers that constitute the ridership of the composite survey day. This is an overall systemwide distribution rate of 46 percent. The comparable response rate in terms of returned forms per 100 entering passengers contained in the preliminary data file, on the other hand, was 10.7 percent (39,629 of the possible 369,456).

The systemwide response rate per broad time periods of the day showed marked variations, as seen in the values presented in Table II-3. The highest response occurred during the morning peak period, when boarding passengers returned 42.9 percent of all questionnaires received. The usable percent return by time period decreases consistently throughout the day, with the midday, evening peak period, and evening showing values of 35.1, 11.4, and 10.6 percent, respectively. The skewness of the returns to early-day boarders is especially clear when one considers that 78.0 percent are from riders who boarded during the first ten hours of surveying and 22.0 percent are from riders who boarded during the final eight hours.

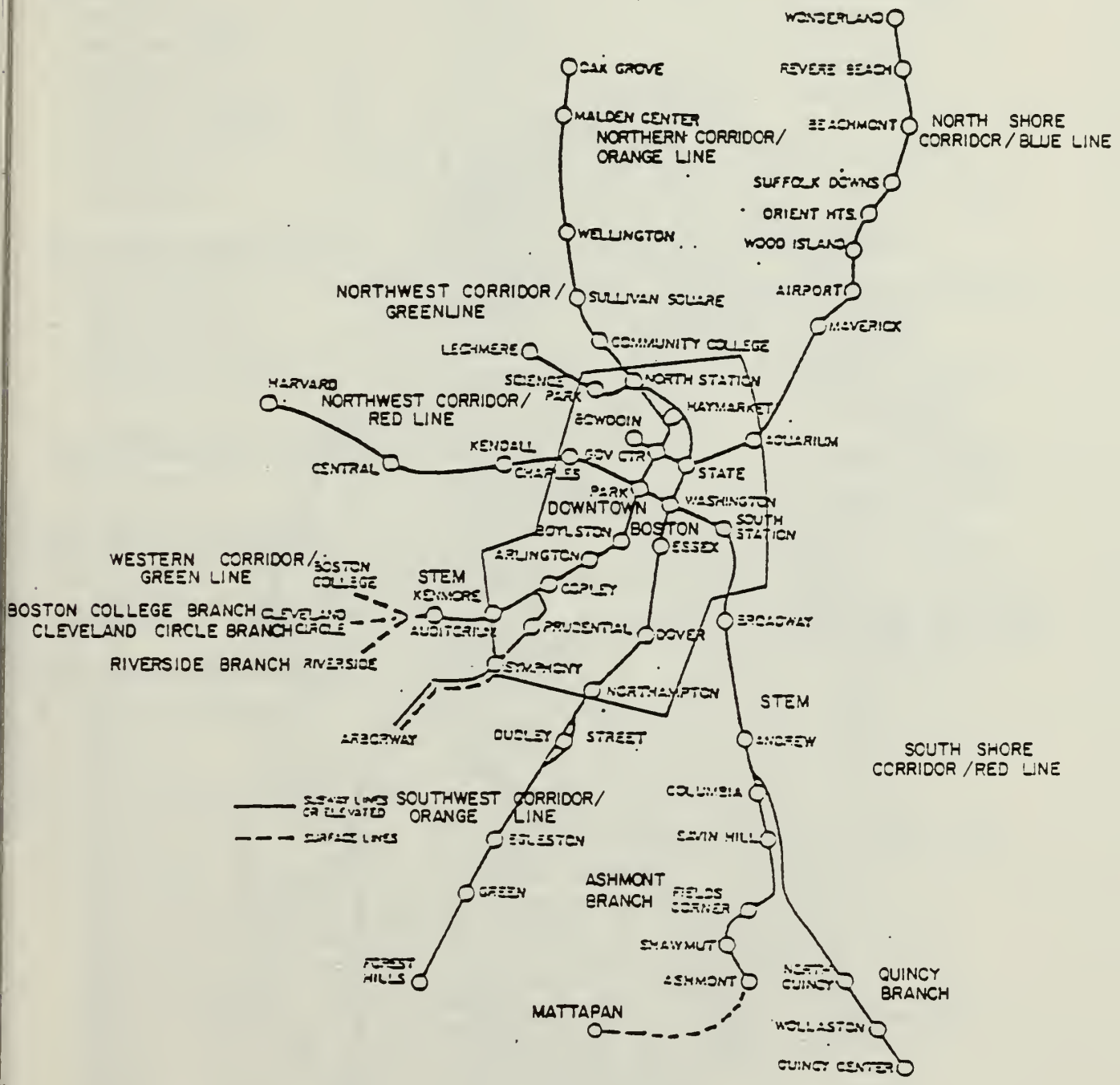
- Corridor/Line Segment Response

The corridors and line segments are as defined in Figure II-6 and Figure II-7 and in Table II-4. Table II-5 presents the number of returned and used passenger survey questionnaires by broad time period at the corridor/line segment level. The systemwide pattern of heaviest returns occurring during the morning peak period is seen to hold true for six of the nine geographic areas. Only the Green Line Central Subway segments in the Northwest and Western corridors--in both cases single stations just outside the edge of Downtown Boston--and the Downtown Boston stations depart from this pattern. In all three cases, riders from the midday period provided the highest number of returned and used questionnaires.

Time Period	Number of Returns	Period Percent of Total
A.M. Peak (6-9am)	17,029	42.9
Midday (9am-4pm)	13,914	35.1
P.M. Peak (4-6pm)	4,502	11.4
Evening (6pm-Midnight)	4,184	10.6
Composite Day	39,629	100.0

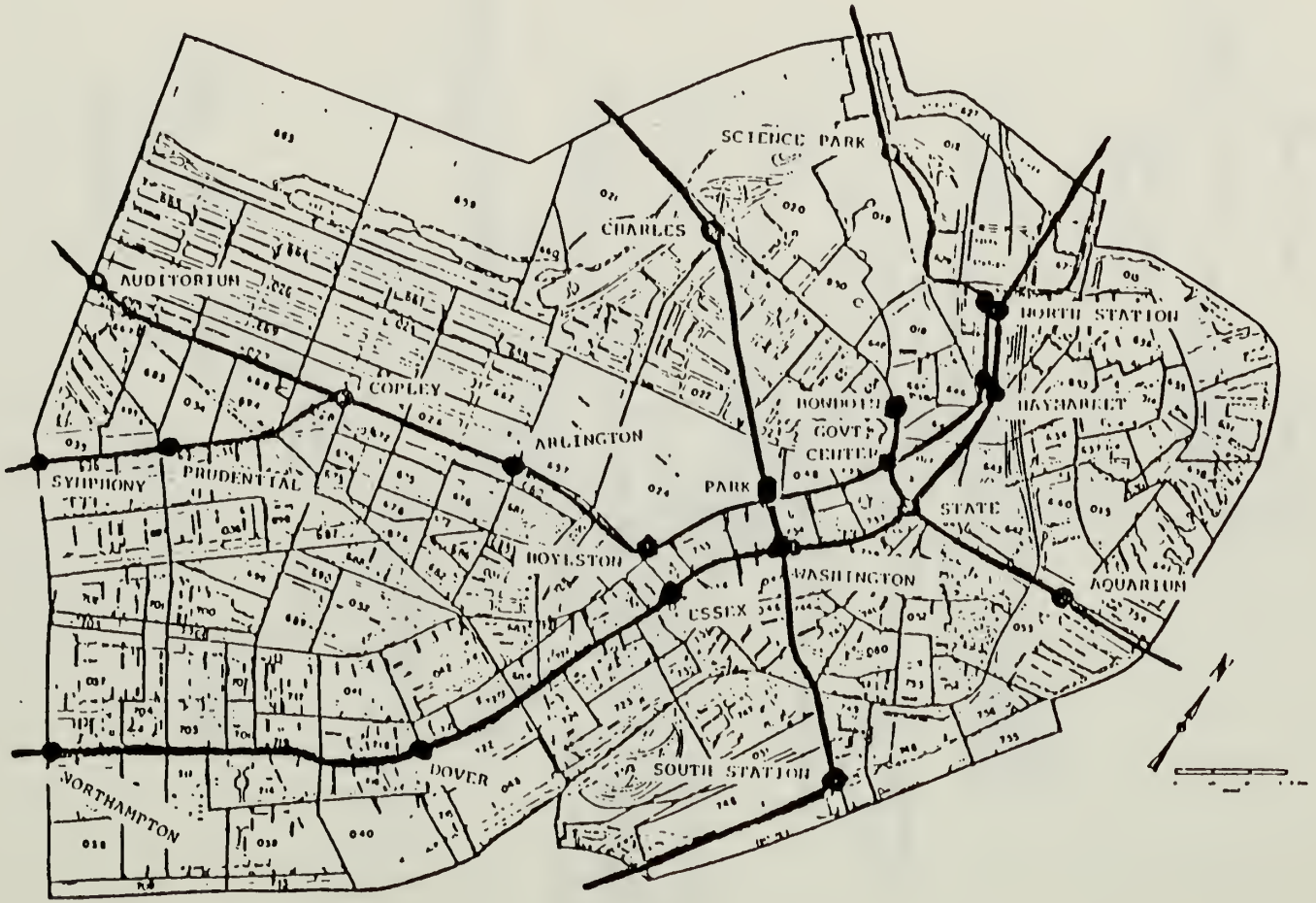
SYSTEMWIDE PASSENGER SURVEY RESPONSE
BROAD TIME PERIODS
MBTA Rapid Transit Data Collection Program

TABLE II-3



CORRIDOR/LINE SEGMENT DEFINITION
RAPID TRANSIT SYSTEM
MBTA Rapid Transit Passenger Data Collection Program

Figure II-6



CORRIDOR/LINE SEGMENT DESCRIPTION
RAPID TRANSIT SYSTEM
DOWNTOWN BOSTON PORTION

FIGURE
II-7

NORTH SHORE/
BLUE LINE

Wonderland
Revere Beach
Beachmont
Suffolk Downs
Orient Heights
Wood Island
Airport
Maverick

NORTHERN/ORANGE LINE

Oak Grove
Malden Center
Wellington
Sullivan Square
Community College

NORTHWEST/GREEN LINE

Lechmere

NORTHWEST/RED LINE

Harvard
Central
Kendall

WESTERN/GREEN LINE

Central Subway

Kenmore

Riverside Branch

Fenway Park
Longwood
Brookline Village
Brookline Hills
Beaconsfield
Reservoir
Chestnut Hill
Newton Centre
Newton Highlands
Eliot
Waban
Riverside

Boston College
Branch

Blandford
Granby
B.U. Center
Armory
St. Paul
Pleasant
Babcock
Brighton
Fordham
Harvard
Long
Allston
Warren
Summit
Washington
Mt. Hood
Colburn
Sutherland
Chiswick
Chestnut Hill
South
Foster
Boston College

Cleveland Circle
Branch

St. Mary's
Carlton
Hawes
Kent
St. Paul
Coolidge Corner
Summit
Brandon Hall
Fairbanks
Washington
Winthrop
Tappan
Dean
Englewood
Strathmore
Cleveland Circle

SOUTHWEST/
ORANGE LINE

Forest Hills
Green
Egleston
Dudley

SOUTH SHORE

Red Line Stem

Andrew
Broadway

Ashmont Branch

Ashmont
Shawmut
Fields Corner
Savin Hill
Columbia

Quincy Branch

Quincy Center
Wollaston
North Quincy

DOWNTOWN BOSTON/
DOWNTOWN STATIONS

North Station
Haymarket
State
Washington
Essex
Dover
Northampton
Science Park
Government Center
Park
Boylston
Arlington
Copley
Auditorium
Prudential
Symphony
Aquarium
Bowdoin
Charles
South Station

CORRIDOR/LINE SEGMENT DEFINITIONS
RAPID TRANSIT SYSTEM
MBTA Rapid Transit Passenger Data Collection Program

TABLE
II-4

Corridor/Line Segment Name	Time Period: Morning Peak 6-9am	Midday 9am-4pm	Afternoon Peak 4-6pm	Evening 6pm-Midnight	Total
North Shore/Blue Line	1,395	999	155	349	2,898
Northern/Orange Line	2,446	766	115	108	3,435
Northwest/Red Line	3,148	2,436	446	869	6,899
Northwest/Green Line	300	318	98	42	758
Western/Green Line R.T.	326	557	123	166	1,172
Western/Surface (w/o Arborway)	2,729	1,996	409	484	5,618
Southwest/Orange Line	1,164	487	120	61	1,832
South Shore/Red Line	2,960	1,752	269	146	5,127
Downtown Boston/Downtown Stas	2,561	4,603	2,767	1,959	11,890
SYSTEMWIDE TOTAL	17,029	13,914	4,502	4,184	39,629

PASSENGER SURVEY QUESTIONNAIRE RETURNS
BROAD TIME PERIODS
BY CORRIDOR/LINE SEGMENT
MBTA Rapid Transit Passenger Data Collection Program

TABLE II-5

The percentage of used returns by time period at the corridor/line segment level is shown in Table II-6. The general systemwide pattern again holds. On all but one of the corridor/line segments, 80 percent or more of returns were from passengers who entered the transit system during the first ten hours of survey distribution. The exception was the Western/Green Line Central subway where the figure drops to 75 percent. In fact, for the Northern/Orange Line, Southwest/Orange Line, and South Shore/Red Line segments, 90 percent or more of the returns were from riders who entered the system during the first ten hours. Even at the Downtown Boston stations, this figure was 60 percent of used returns.

Systemwide responses by time periods and total corridor/line segment responses are interesting and have an indirect effect on the expanded survey results. The direct effect on the expansion of surveyed rider characteristics to the total riding public, however, is dependent on the figures shown in Table II-7 and II-8 (II-8.2 through II-8.9) by corridor/line segment and by the stations constituting each line segment, respectively.

The highest response rate, defined as returned and used questionnaires divided by entering passengers, of all corridors/line segments is the 18.3 percent rate of the Northwest/Red Line. The 17.6 percent and 15.9 percent rates of the Northern/Orange Line and North Shore/Blue Line, respectively, fall closely behind. Of the corridors, only the Southwest/Orange Line, at 7.4 percent, shows a response rate below 10 percent. However, the South Shore/Red Line rate is just over this 10-percent threshold, at 10.7 percent.

The following major stations show some of the higher response rates (above 20 percent)--Wonderland and Beachmont stations of the Blue Line in the North Shore Corridor, Oak Grove and Malden Center of the Northern Corridor/Orange Line, and Kendall of the Northwest/Red Line. The rates for Harvard Square, Revere Beach, and Orient Heights are just below this figure. The single highest rate, 31.8 percent, is that for Eliot Station of the Western Corridor/Green Line-Riverside Branch. Three other stations stops along this line segment--Waban, Woodland, and Beaconsfield--have response rates of over 25 percent.

The stations with the lowest rates are clustered together along the Southwest/Orange Line and in Downtown Boston (including, particularly, the six major transfer stations). Of major corridor stations outside Downtown Boston, Dudley, at 5.5 percent, has the lowest rate. Even this unusually low figure, however, is eclipsed by the 2.9 percent rate at Suffolk Downs on the Blue Line and the 3.9 percent rate of Armory B.U./West on the Western Corridor/Green Line-Boston College Branch. Two other stops on this branch, St. Paul (4.2 percent) and Granby/B.U. East (5.2 percent), also have quite low rates.

The station with the lowest response rate of all major stations in the entire system is State in Downtown Boston, at 3.5 percent. The rates for the other downtown transfer stations--Washington (4.0), Government Center (4.2), Park (5.0), Haymarket

Corridor/Line Segment Name	Time Period: Morning Peak 6-9am	Midday 9am-4pm	Afternoon Peak 4-6pm	Evening 6pm-Midnight
North Shore/Blue Line	48.1	34.4	5.3	12.2
Northern/Orange Line	71.2	22.3	3.3	3.1
Northwest/Red Line	45.6	35.3	6.5	12.6
Northwest/Green Line	39.6	41.9	12.9	5.5
Western/Green Line R.T.	27.8	47.5	10.5	14.2
Western/Surface (w/o Arborway)	48.6	35.5	7.3	8.6
Southwest/Orange Line	63.5	26.7	6.6	3.3
South Shore/Red Line	57.7	34.2	5.2	2.8
Downtown Boston/Downtown Stations	21.5	38.7	23.3	16.5
SYSTEMWIDE TOTAL	42.9	35.1	11.4	10.6

PASSENGER SURVEY QUESTIONNAIRE RETURN PERCENTS
BROAD TIME PERIODS
BY CORRIDOR/LINE SEGMENT
MBTA Rapid Transit Passenger Data Collection Program

TABLE II-6

Corridor/Line Segment Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
North Shore/Blue Line	18,264	2,898	15.9
Northern/Orange Line	19,521	3,435	17.6
Northwest/Red Line	37,783	6,899	18.3
Northwest/Green Line	6,404	758	11.8
Western/Green Line R.T.	9,473	1,172	12.4
Western/Surface (w/o Arborway)	40,259	5,618	14.0
Southwest/Orange Line	24,850	1,832	7.4
South Shore/Red Line	48,062	5,127	10.7
Downtown Boston/Downtown Stations	164,840	11,890	7.2
SYSTEM TOTAL	369,456	39,629	10.7

SUMMARY OF PASSENGER SURVEY QUESTIONNAIRE RESPONSE
OVERALL COMPOSITE DAY
BY CORRIDOR/LINE SEGMENT
MBTA Rapid Transit Passenger Data Collection Program

TABLE II-7

CORRIDOR: NORTH SHORE

LINE SEGMENT: BLUE LINE

Station Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
Wonderland	2,536	625	24.6
Revere Beach	1,438	282	19.6
Beachmont	1,546	316	20.4
Suffolk Downs	589	17	2.9
Orient Heights	3,222	623	19.3
Wood Island	1,135	172	15.2
Airport	2,119	268	12.6
Maverick	5,679	595	10.5
SEGMENT SUBTOTAL	18,264	2,898	15.9
CORRIDOR TOTAL	18,264	2,898	15.9

SUMMARY OF PASSENGER SURVEY QUESTIONNAIRE RESPONSE
OVERALL COMPOSITE DAY
BY CORRIDOR/LINE SEGMENT AND BOARDING STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE II-8.1

CORRIDOR: NORTHERN

LINE SEGMENT: ORANGE LINE NORTH

Station Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
Oak Grove	2,236	585	26.2
Malden Center	2,548	628	24.6
Wellington	5,519	937	17.0
Sullivan Square	7,138	1,049	14.7
Community College	2,080	236	11.3
SEGMENT SUBTOTAL	19,521	3,435	17.6
CORRIDOR TOTAL	19,521	3,435	17.6

SUMMARY OF PASSENGER SURVEY QUESTIONNAIRE RESPONSE
OVERALL COMPOSITE DAY
BY CORRIDOR/LINE SEGMENT AND BOARDING STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE
II-8.2

CORRIDOR: NORTHWEST

LINE SEGMENT: RED LINE NORTHWEST

Station Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
Harvard	23,532	4,565	19.4
Central	8,737	1,185	13.6
Kendall	5,514	1,149	20.8
SEGMENT SUBTOTAL	37,783	6,899	18.3

LINE SEGMENT: GREEN LINE NORTHWEST

Station Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
Lechmere	6,404	758	11.8
SEGMENT SUBTOTAL	6,404	758	11.8
CORRIDOR TOTAL	44,187	7,657	17.3

SUMMARY OF PASSENGER SURVEY QUESTIONNAIRE RESPONSE
OVERALL COMPOSITE DAY
BY CORRIDOR/LINE SEGMENT AND BOARDING STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE II-8.3

CORRIDOR: WESTERN

LINE SEGMENT: CENTRAL SUBWAY

Station Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
Kenmore	9,473	1,172	12.4
SEGMENT SUBTOTAL	9,473	1,172	12.4

LINE SEGMENT: RIVERSIDE BRANCH

Station Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
Fenway	2,092	280	13.4
Longwood	1,194	223	18.7
Brookline Village	2,048	309	15.1
Brookline Hills	1,457	263	18.1
Beaconsfield	476	121	25.4
Reservoir	1,063	150	14.1
Chestnut Hills	908	93	10.2
Newton Centre	1,297	162	12.5
Newton Highlands	1,079	230	21.3
Eliot	500	159	31.8
Waban	462	131	28.4
Woodland	942	240	25.5
Riverside	1,110	148	13.3
Evening Line Total	-	226	-
SEGMENT SUBTOTAL	14,628	2,735	18.7

SUMMARY OF PASSENGER SURVEY QUESTIONNAIRE RESPONSE
OVERALL COMPOSITE DAY
BY CORRIDOR/LINE SEGMENT AND BOARDING STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE II-8.4

CORRIDOR: WESTERN

LINE SEGMENT: BOSTON COLLEGE BRANCH (COMMONWEALTH AVE.)

Station Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
Blandford	1,983	127	6.4
BU East	384	20	5.2
BU Central	919	95	10.3
BU West	763	30	3.9
St. Paul	237	10	4.2
Pleasant	414	43	10.4
Babcock	1,100	69	6.3
Brighton	685	83	12.1
Fordham	379	36	9.5
Harvard Ave.	1,728	116	6.7
Long	602	64	10.6
Allston	643	101	15.7
Warren	782	69	8.8
Summit	484	76	15.7
Washington St.	851	72	8.5
Mt. Hood	140	35	25.0
Colburn	427	74	17.3
Sutherland	299	41	13.7
Chiswick	588	49	8.3
Chestnut Hill	467	59	12.6
South St.	229	42	18.3
Foster	126	29	23.0
Boston College	948	95	10.0
Evening Line Total	-	101	-
SEGMENT SUBTOTAL	15,178	1,536	10.1

SUMMARY OF PASSENGER SURVEY QUESTIONNAIRE RESPONSE
OVERALL COMPOSITE DAY
BY CORRIDOR/LINE SEGMENT AND BOARDING STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE II-8.5

CORRIDOR: WESTERN

LINE SEGMENT: CLEVELAND CIRCLE (BEACON STREET)

Station Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
St. Mary	2,300	238	10.3
Carlton	131	10	7.6
Hawes	189	10	5.3
Kent	382	61	16.0
St. Paul	614	77	12.5
Coolidge Corner	2,068	166	8.0
Winchester	87		
Summit	596	72	12.1
Brandon Hall	248	25	10.1
Fairbanks	358	80	22.3
Washington St.	669	89	13.3
Winthrop	314	57	18.2
Tappan	455	56	12.3
Dean	278	27	9.7
Englewood	390	64	16.4
Strathmore	296	66	22.3
Cleveland Circle	1,078	205	19.0
Evening Line Total	-	44	-
SEGMENT SUBTOTAL	10,453	1,347	12.9
CORRIDOR TOTAL	49,732	6,790	13.7

SUMMARY OF PASSENGER SURVEY QUESTIONNAIRE RESPONSE
OVERALL COMPOSITE DAY
BY CORRIDOR/LINE SEGMENT AND BOARDING STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE II-8.6

CORRIDOR: SOUTHWEST

LINE SEGMENT: ORANGE LINE SOUTH

Station Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
Forest Hills	11,042	911	8.2
Green	1,605	157	9.8
Egleston	4,181	321	7.7
Dudley St.	8,022	443	5.5
SEGMENT SUBTOTAL	24,850	1,832	7.4
CORRIDOR TOTAL	24,850	1,832	7.4

SUMMARY OF PASSENGER SURVEY QUESTIONNAIRE RESPONSE
OVERALL COMPOSITE DAY
BY CORRIDOR/LINE SEGMENT AND BOARDING STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE
II-8.7

CORRIDOR: SOUTH SHORE

LINE SEGMENT: RED LINE STEM

Station Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
Andrew	4,758	339	7.1
Broadway	3,874	259	6.7
SEGMENT SUBTOTAL	8,632	598	6.9

LINE SEGMENT: ASHMONT BRANCH

Station Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
Ashmont	10,269	873	8.5
Shawmut	1,200	193	16.1
Fields Corner	4,711	386	8.2
Savin Hill	1,636	219	13.4
Columbia	4,200	268	6.4
SEGMENT SUBTOTAL	22,016	1,939	8.8

LINE SEGMENT: QUINCY BRANCH

Station Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
Quincy Center	9,412	1,276	13.6
Wollaston	3,614	562	15.6
North Quincy	4,388	752	17.1
SEGMENT SUBTOTAL	17,414	2,590	14.9
CORRIDOR TOTAL	48,062	5,127	10.7

SUMMARY OF PASSENGER SURVEY QUESTIONNAIRE RESPONSE
OVERALL COMPOSITE DAY
BY CORRIDOR/LINE SEGMENT AND BOARDING STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE II-8.8

CORRIDOR: DOWNTOWN BOSTON

LINE SEGMENT: DOWNTOWN STATIONS

Station Name	Total Boardings	Passenger Survey Forms Returned	Percent Response
North Station	7,256	294 Green 242 Orange	7.4
Haymarket	8,066	240 Green 183 Orange	5.2
State	13,635	117 Blue 363 Orange	3.5
Washington	25,559	680 Red 330 Orange	4.0
Essex	5,903	317	5.4
Dover	3,037	285	9.4
Northampton	3,711	333	9.0
Government Center	10,799	443 Green 9 Blue	4.2
Park	24,723	568 Green 672 Red	5.0
Boylston	4,809	657	13.7
Arlington	11,007	1,234	11.2
Copley	13,246	1,411	10.7
Auditorium	7,979	903	11.3
Prudential	2,166	284	13.1
Symphony	2,064	210	10.2
Aquarium	1,681	149	8.9
Bowdoin	2,013	179	8.9
Charles	6,654	712	10.7
South Station	9,810	946	9.6
Science Park	722	129	17.9
SEGMENT SUBTOTAL	164,840	11,890	7.2
CORRIDOR TOTAL	164,840	11,890	7.2
SYSTEMWIDE TOTAL	369,456	39,629	10.7

SUMMARY OF PASSENGER SURVEY QUESTIONNAIRE RESPONSE
OVERALL COMPOSITE DAY
BY CORRIDOR/LINE SEGMENT AND BOARDING STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE
II-8.9

(5.2), and North Station (7.4)--are not really much higher. Of the other Downtown Boston stations, only Essex Station, at 5.4 percent, has a rate as low as those of the major transfer stations.

C. DATA REDUCTION PROCESS

The reduction of both the passenger count data and the passenger survey questionnaire data was a major effort. The work involved the conducting of independent checks on the reported data where possible, the checking of the data for internal consistency, and, in the case of the passenger survey, the expansion of the returned and used surveys to estimate the characteristics of the total travelling universe.

1. Passenger Count Data

The passenger count data forms were first manually edited for obvious transcription errors and consistency in the recording of these data. Following this manual edit, the values from the forms, adjusted as appropriate, were keypunched and a computer-readable data set was produced.

A number of computer programs were used to aid in the analysis of the count data. Checks were made for logical relationships between data readings, e.g., increasing turnstile readings and too many or too few boarding passengers during a given time period. The distribution of boardings over time was also analyzed.

Where errors were found in the recorded data, corrections were made to force the data values to conform with expected values based upon adjacent time periods and expected patterns of usage. The scope of these corrections was relatively small. As an independent check on the count and revenue data, a comparison was made against the Rapid Transit Line (RTL) Revenue Data collected by the MBTA for the days when counting was underway. In general, the count data were generally within five percent of the RTL revenue total at the station level.

2. Passenger Survey Data

Because the passenger survey questionnaires were filled out by the general public, extensive editing of the forms proved necessary. The returned questionnaires were first subjected to a manual editing procedure. During this procedure, the questionnaire forms were checked for completeness of response and for authenticity. Over 47,700 questionnaires met the initial edit criteria. Questionnaires whose data did not meet these criteria were discarded. The responses on valid questionnaires were then coded to numeric values in order to allow for computer processing. After the initial edits were made, the numerically coded responses were keypunched and a computer-readable magnetic tape was produced.

The next step in the process was to determine both the station at which the questionnaire was distributed and the actual time that it was handed out. This matching was accomplished by using a computerized procedure which matched the serial number of the

questionnaire with information from the so-called R-3--Rail Questionnaire Tally Sheet--form presented as Figure II-5 earlier in this chapter. Basically, the procedure correlated the serial number of the questionnaire with a station and time period. Over 75 percent of the questionnaires were matched to stations and form the preliminary passenger survey data file.

A computer program was also used to check for correct number ranges for coded answers. When found, incorrectly coded values were changed to reflect a "no response" to the question. Logical relationships between answers were also checked for an illogical responses, e.g., a person 65 years of age paying a student half-fare, were also recoded to "no response".

The appropriateness of any transfer stations indicated by the respondent was checked against the station of boarding and alighting inidcated. Additionally, it was possible to assign the most probable transfer station to an individual based upon a shortest path criterion between the two stations. It was also possible to determine a rider's second and even third transfer station, based upon both the recoded response and the shortest path criterion.

Passengers had been asked to record the address of both the origin and destination of their trips. It would be virtually impossible to ascertain travel patterns by using individual addresses. Instead, through a process known as geocoding, individual addresses can be grouped (matched) by aerial units called traffic zones. Each traffic zone represents a geographical area which contains any number of possible origin and destination points. It is then possible to determine estimated movements between these geographical areas. The basic aerial unit that questionnaire responses were assigned to was the tract and block system developed by and for the U.S. Bureau of the Census. These geographic building-blocks can easily be aggregated to any number of zone systems, including those used by the CTPS.

A computerized procedure was used in the geocoding. Once the survey records (computerized equivalents of survey questionnaires) were geocoded, it was then possible to check for logical relationships among the place of origin of the trip, its destination, and its boarding and alighting stations. Survey records that indicated grossly illogical responses were edited out of the survey file and discarded.

3. Passenger Survey Expansion

Once both the passenger count and passenger questionnaire survey data files were finalized, it still remained to factor the survey results upward to represent the total ridership of the MBTA system on the composite survey day--that is, to extrapolate the coded responses of 39,629 persons over the total 369,456 persons who rode the system. The passenger count data were used as the control totals to factor against. In the preliminary data processing to date, the composite survey day was divided into six of time periods and factoring performed for each period. The choice of the time periods was based both on the planning needs of the MBTA and on requirements for a given level of statistical reliability (validity).

Once the factoring process was completed, a preliminary comprehensive data base had been formed. The information contained in this data base can be readily accessed through use of a variety of computer programs. Passenger count data and passenger survey information can be tabulated in any number of ways. In addition, this file can be fairly easily updated when new information is provided.

III. PASSENGER COUNT RESULTS

A. INTRODUCTION

This chapter reports the direct results obtained from the passenger count activities described in Chapter II. Included in the analysis are data for all portions of the rapid transit system and, except for the Arborway Branch,[1] the surface portion of the Green Line. Due to differences in operation and, therefore, the data collected, the Green Line surface operation is treated somewhat differently from the remainder of the system at particular points.

The information gathered is presented at the system-wide, corridor/line segment, and station levels, for the composite survey day (as described in Chapter I). The corridor/line segments are as defined in Table II-4 and Figure II-6 and Figure II-7.

B. SYSTEMWIDE RESULTS

For the composite survey day, a total of 369,456 riders entered the transit system at the 58 subway and elevated stations and the 55 spots along the Green Line's Riverside, Boston College, and Cleveland Circle branches. Figure III-1 shows the distribution of these riders by station of entry for the subway/elevated portion of the system and by line of entry for the Green Line's surface operation.

For the subway/elevated portion of the system, the data allows for the separation of prepaid pass users from passengers paying cash fares. Table III-1 presents this distribution. Of the 329,197 passengers who entered stations of the subway/elevated, 35,431 used a prepaid pass and 293,766 paid a cash fare. These figures represent 10.8 percent and 89.2 percent of boarders, respectively. The distribution of the cash fare passengers to station of entry is depicted in Figure III-2.

It is not possible to provide a similar breakdown of ridership between cash fares and prepaid passes for the surface operations portion of the Green Line. This precludes any such breakdown for the total system as well.

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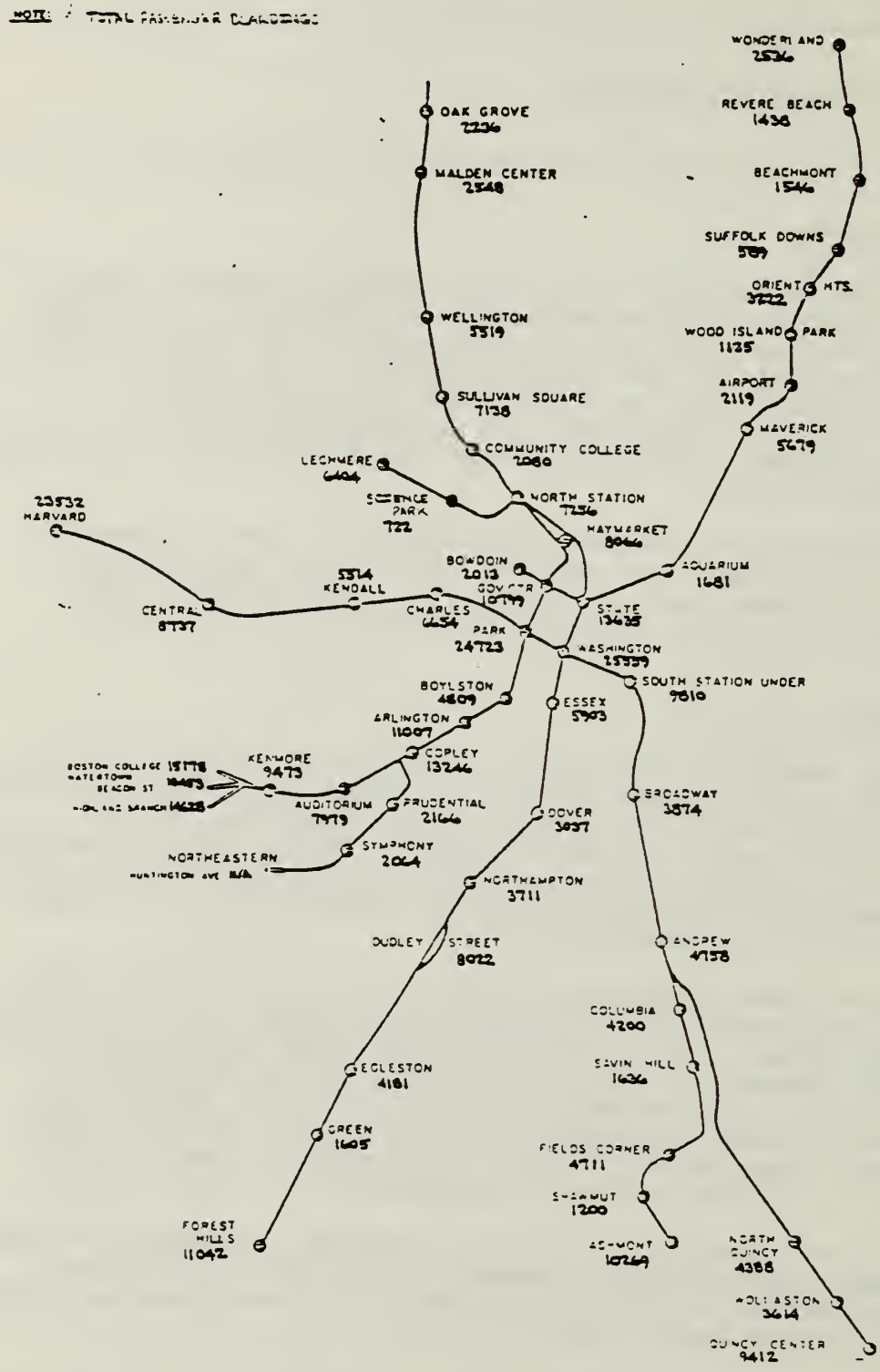
[1] Data collection for the Arborway Branch of the Green Line was not included in the Rapid Transit Survey phase of the System-wide Passenger Data Collection Program. The survey work for this branch was, instead, included within the Bus System phase of the data collection work.



TOTAL PASSENGERS
COMPOSITE SURVEY DAY
BY STATION OF ENTRY
MBTA Rapid Transit Passenger Data Collection Program

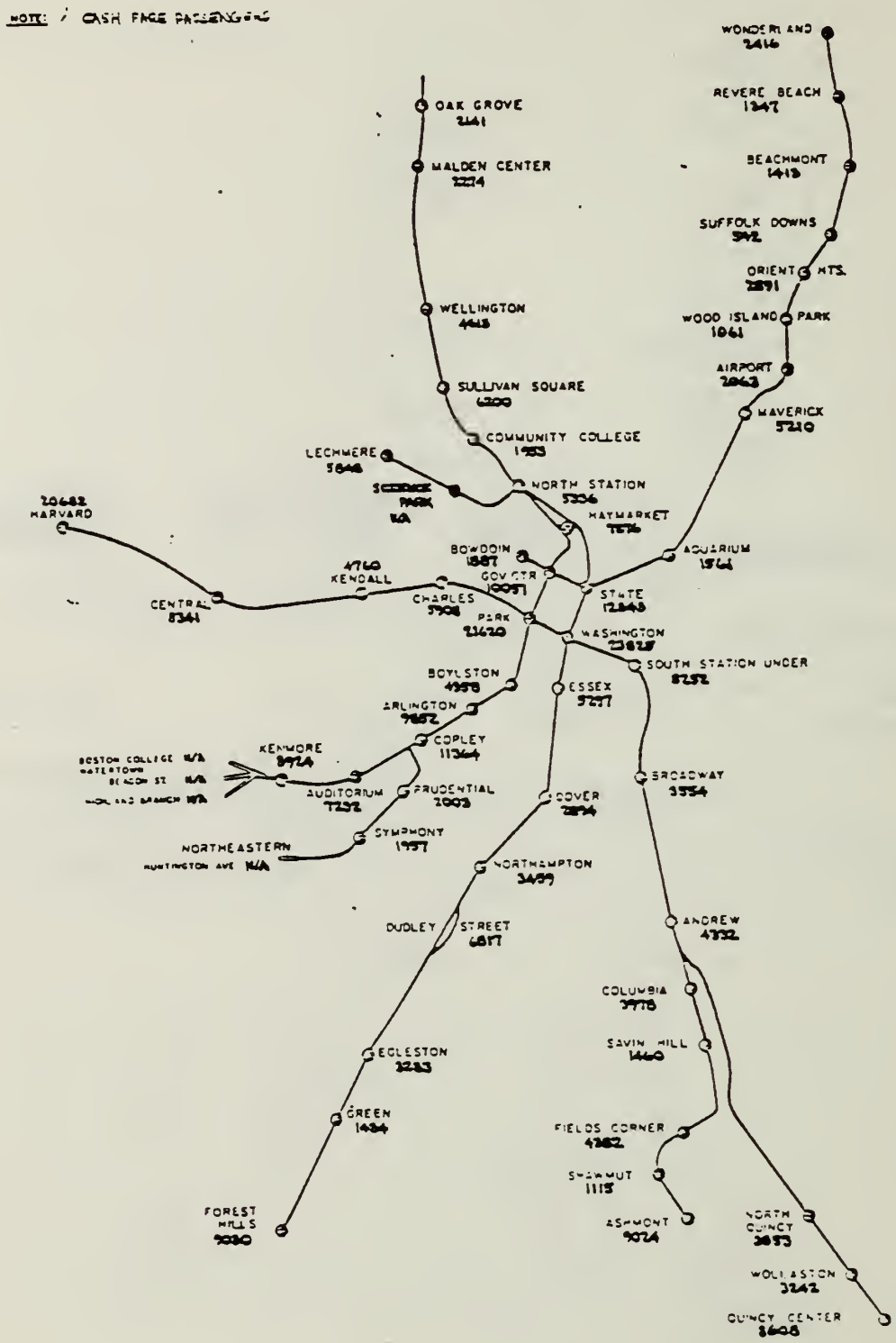
FIGURE
III-1

SYSTEM COMPONENT	CASH-FARE PASSENGERS	PREPAID PASS PASSENGERS	TOTAL PASSENGERS
Subway/Elevated	293,766	35,431	329,197
Surface Operation	NA	NA	40,259
SYSTEMWIDE TOTALS	NA	NA	369,456

SYSTEMWIDE PASSENGER COUNT SUMMARY - APRIL, 1978
COMPOSITE DAY

MBTA RAPID TRANSIT PASSENGER DATA COLLECTION PROGRAM

TABLE III- 1



CASH-FARE PASSENGERS
COMPOSITE SURVEY DAY
BY STATION OF ENTRY
MBTA Rapid Transit Passenger Data Collection Program

FIGURE
III-2

The temporal distribution of total entering passengers over the course of the day is shown in Figure III-3. As can be seen, substantial numbers of trips are concentrated within the morning and evening peak periods--roughly 7:00 A.M. to 9:00 A.M. and 4:00 P.M. to 6:00 P.M., respectively. The afternoon peak period boardings are about 10 percent greater than those of the morning peak period. Information gathered in the passenger questionnaire survey, indicates that the magnitude of travel to or from work is about equal in the two periods. The difference, therefore, is that a substantially larger number of trips of other purposes are added onto the work travel in the afternoon.

C. CORRIDOR/LINE SEGMENT RESULTS

The corridor/line segments are defined in Table II-4 and Figure II-6 and Figure II-7. The grand total for each of these subdivisions is presented in Table III-2. By far the largest number, 164,118, of entering passengers did so at stations in Downtown Boston. Of the radial corridors, the Western/Green Line, with 49,732, had the most entering passengers. The South Shore/ Red Line, with 48,062, was right behind. The other portion of the Red Line, in the Northwest Corridor, ranked third, with 37,783 passengers. In order of decreasing passenger boardings, the Southwest/Orange Line, Northern/Orange Line, North Shore/ Blue Line, and Northwest/Green Line round out the results.

Prepaid pass usage was highest on the Southwest/Orange Line, with 4,286 (17.2 percent) of 24,850 entering passengers using a pass. The lowest pass usage was the 7.2 percent for the North Shore/Blue Line. Pass usage was close to the systemwide average of 10.8 percent on all other segments.

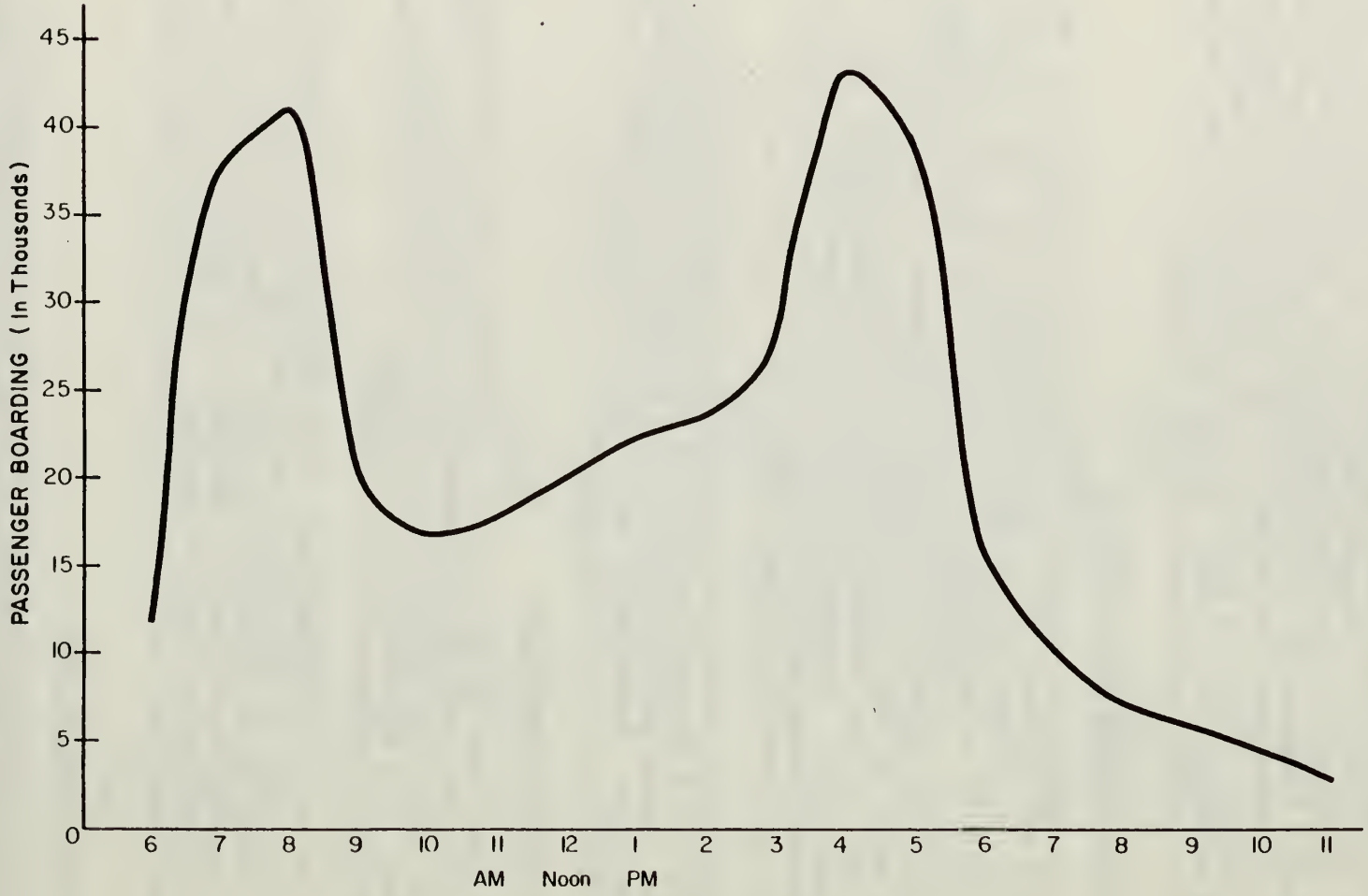
1. North Shore/Blue Line

The distribution of entering passengers among the stations constituting this segment is presented in Table III-3. The major station of entry was Maverick Station, with 5,679 entering passengers. The other stations with over 2,000 boardings were Orient Heights, Wonderland and Airport.

The number of prepaid pass users was highest at Maverick. However, in terms of percentage of boarders using passes, Orient Heights ranked first with 10.3 percent. Maverick, with 8.3 percent, ranked third, behind Beachmont as well. The percentage at Airport was lowest, at 2.6 percent. In fact, this figure is the lowest percentage usage at any station in the rapid transit system.

2. Northern/Orange Line

Entering passengers, by station for this corridor/line segment, are shown in Table III-4. Sullivan Square had the most boarding passengers, 7,138. Next was Wellington, with 5,519.



DISTRIBUTION OF PASSENGER BOARDINGS BY HOUR OF DAY
COMPOSITE SURVEY DAY

MBTA Rapid Transit Passenger Data Collection Program

FIGURE III-3

Corridor/ Line Segment Name	Fare Payment Method: Cash Fare	Fare Payment Method: Prepaid Pass	Total Passengers	Total Cash Fare
North Shore/ Blue Line	16,943	1,321	18,264	$ 4,002.45
Northern/ Orange Line	17,181	2,340	19,521	4,788.92
Northwest/ Red Line	33,783	3,990	37,783	7,836.17
Northwest/ Green Line	5,848	556	6,404	1,200.47
Western/Green Line (w/o Arborway)	NA	NA	49,732	NA
Southwest/ Orange Line	20,564	4,286	24,850	4,255.16
South Shore/ Red Line	43,548	4,514	48,062	6,341.38
Downtown Boston/ Downtown Stations (w/o Science Park)	146,975	17,143	164,118	33,197.59
Downtown Boston/ Science Park	NA	NA	722	NA
SYSTEM TOTAL	NA	NA	369,456	NA

BOARDING PASSENGERS
COMPOSITE SURVEY DAY
BY CORRIDOR/LINE SEGMENT
MBTA Rapid Transit Passenger Data Collection Program

TABLE III-2

CORRIDOR: NORTH SHORE

LINE SEGMENT: BLUE LINE

Station Name	Fare Payment Method: Cash Fare	Fare Payment Method: Prepaid Pass	Total Passengers	Total Cash Fare
Wonderland	2,416	120	2,536	$ 579.82
Revere Beach	1,347	91	1,438	298.80
Beachmont	1,413	133	1,546	327.72
Suffolk Downs	542	47	589	129.03
Orient Heights	2,891	331	3,222	687.95
Wood Island	1,061	74	1,135	232.44
Airport	2,063	56	2,119	483.20
Maverick	5,210	469	5,679	1,172.49
SEGMENT SUBTOTAL	16,943	1,321	18,264	$4,002.45
CORRIDOR TOTAL	16,943	1,321	18,264	$4,002.45

BOARDING PASSENGERS BY FARE PAYMENT METHOD
COMPOSITE SURVEY DAY
BY CORRIDOR/LINE SEGMENT AND STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE III-3

CORRIDOR: NORTHERN

LINE SEGMENT: ORANGE LINE NORTH

Station Name	Fare Payment Method: Cash Fare	Fare Payment Method: Prepaid Pass	Total Passengers	Total Cash Fare
Oak Grove	2,141	95	2,236	$ 976.67
Malden Center	2,274	274	2,548	875.95
Wellington	4,613	906	5,519	1,068.09
Sullivan Square	6,200	938	7,138	1,433.53
Community College	1,953	127	2,080	434.68
SEGMENT SUBTOTAL	17,181	2,340	19,521	$4,788.92
CORRIDOR TOTAL	17,181	2,340	19,521	$4,788.92

BOARDING PASSENGERS BY FARE PAYMENT METHOD
COMPOSITE SURVEY DAY
BY CORRIDOR/LINE SEGMENT AND STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE III-4

Sullivan also had the most prepaid pass users--938, or 13.1 percent of all boarders. Wellington was very close behind, however, with 906 pass users. This figure represents a 16.4 percent pass usage, which was one of the highest rates in the entire system.

3. Northwest/Red Line

Entering passenger figures by station for this corridor/line segment are presented in the upper portion of Table III-5. Harvard Square, the terminal station, ranked first in both total passengers entering the system (23,532) and in the number of prepaid pass users (2,850). The other two stations, Central and Kendall, were also of systemwide importance, ranking 6th and 11th, respectively, among outlying corridor stations in total entering passengers.

The importance of Harvard Station is emphasized by the fact that both its total number of entering passengers and its number of pass users are, by far, the greatest for all outlying corridor stations. Only Washington and Park stations, both serviced by two lines in Downtown Boston, had more entering passengers, and only Park had more pass users.

In percentage of boarders using prepaid passes, Kendall Station (13.7 percent) somewhat exceeded Harvard. Central's 4.5 percent of entering passengers using prepaid passes is surprisingly low, given the more frequent usage seen at the other two stations.

4. Northwest/Green Line

Entering passenger data for the single station of this corridor/line segment are presented in the lower portion of Table III-5. This station, Lechmere terminal of the Central Subway, had a total of 6,404 entering passengers. This figure ranks the station among the top ten boarding stations in the outlying corridors. The 8.7 percent (556 passengers) prepaid pass usage is somewhat below the systemwide average.

5. Western/Green Line

The passenger activity figures for the stations and stops of the four line segments of the Green Line that fall within the Western Corridor are presented in Tables III-6.1 through III-6.3.

The westernmost portion of the Central Subway and the surface operations segments of the Green Line, except for Arborway Branch, are included in the corridor.

CORRIDOR: NORTHWEST

LINE SEGMENT: RED LINE NORTHWEST

Station Name	Fare Payment Method: Cash Fare	Fare Payment Method: Prepaid Pass	Total Passengers	Total Cash Fare
Harvard	20,682	2,850	23,532	$4,909.99
Central	8,341	396	8,737	1,820.75
Kendall	4,760	754	5,514	1,105.43
SEGMENT SUBTOTAL	33,783	3,990	37,783	$7,836.17

LINE SEGMENT: GREEN LINE NORTHWEST

Station Name	Fare Payment Method: Cash Fare	Fare Payment Method: Prepaid Pass	Total Passengers	Total Cash Fare
Lechmere	5,848	556	6,404	$1,200.47
SEGMENT SUBTOTAL	5,848	556	6,404	$1,200.47
CORRIDOR TOTAL	39,631	4,546	44,187	$9,036.64

BOARDING PASSENGERS BY FARE PAYMENT METHOD
COMPOSITE SURVEY DAY
BY CORRIDOR/LINE SEGMENT AND STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE III-5

CORRIDOR: WESTERN

LINE SEGMENT: CENTRAL SUBWAY

Station Name	Fare Payment Method: Cash Fare	Fare Payment Method: Prepaid Pass	Total Passengers	Total Cash Fare
Kenmore	8,924	549	9,473	$2,101.36
SEGMENT SUBTOTAL	8,924	549	9,473	$2,101.36

LINE SEGMENT: RIVERSIDE BRANCH

Station Name	Fare Payment Method: Cash Fare	Fare Payment Method: Prepaid Pass	Total Passengers	Total Cash Fare
Fenway			2,092	
Longwood			1,194	
Brookline Village			2,048	
Brookline Hills			1,457	
Beaconsfield			476	
Reservoir			1,063	
Chestnut Hills			908	
Newton Center			1,297	
Newton Highlands			1,079	
Eliot			500	
Waban			462	
Woodland			942	
Riverside			1,110	
SEGMENT SUBTOTAL	NA	NA	13,549	NA

BOARDING PASSENGERS BY FARE PAYMENT METHOD
COMPOSITE SURVEY DAY
BY CORRIDOR/LINE SEGMENT AND STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE III-6.

CORRIDOR: WESTERN

LINE SEGMENT: BOSTON COLLEGE BRANCH

Station Name	Fare Payment Method: Cash Fare	Fare Payment Method: Prepaid Pass	Total Passengers	Total Cash Fare
Blandford			1,983	
BU East			384	
BU Central			919	
BU West			763	
St. Paul			237	
Pleasant			414	
Babcock			1,100	
Brighton			685	
Fordham			379	
Harvard Ave.			1,728	
Long			602	
Allston			643	
Warren			782	
Summit			484	
Washington St.			851	
Mt. Hood			140	
Colburn			427	
Sutherland			299	
Chiswick			588	
Chestnut Hill			467	
South St.			229	
Foster			126	
Boston College			126	
SEGMENT SUBTOTAL	NA	NA	15,178	NA

BOARDING PASSENGERS BY FARE PAYMENT METHOD
COMPOSITE SURVEY DAY
BY CORRIDOR/LINE SEGMENT AND STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE III-62

CORRIDOR: WESTERN

LINE SEGMENT: CLEVELAND CIRCLE

Station Name	Fare Payment Method: Cash Fare	Fare Payment Method: Prepaid Pass	Total Passengers	Total Cash Fare
St. Mary			2,300	
Carlton			131	
Hawes			189	
Kent			382	
St. Paul			614	
Coolidge Corner			2,068	
Winchester			87	
Summit			596	
Brandon Hill			248	
Fairbanks			358	
Washington St.			669	
Winthrop			314	
Tappan			455	
Dean			278	
Englewood			390	
Strathmore			296	
Cleveland Circle			1,078	
SEGMENT SUBTOTAL	NA	NA	10,453	NA
CORRIDOR TOTAL	NA	NA	49,732	NA

BOARDING PASSENGERS BY FARE PAYMENT METHOD
COMPOSITE SURVEY DAY
BY CORRIDOR/LINE SEGMENT AND STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE III-6.

The Central Subway segment is comprised of only Kenmore Station, at which a total of 9,473 passengers enter the system. Of this total, only 549, or 5.8 percent, used a prepaid pass. The total passenger figure is exceeded by only three other outlying stations. The percentage of pass users is, however, only about one-half of the systemwide average.

For the surface operations--branches running westward from Kenmore to Riverside, Boston College, and Cleveland Circle--only the total number of entering passengers is available. While over 40,000 passengers boarded at stops along the three branches, the stops are so numerous that the number of boardings at each was relatively small.

Along the Riverside Branch, two stops--Fenway (2,092) and Brookline Village (2,048)--had more than 2,000 entering passengers. Six other stops had more than 1,000, including the terminal Riverside stop (1,110).

The Boston College Branch, with the most stops of any of the branches, had only three stops where more than 1,000 passengers entered the system. In rank order, these are Blandford (1,983), Harvard Avenue (1,728), and Babcock (1,100). Boston College (948), the line's namesake, was just below the thousand figure.

The Cleveland Circle Branch had the distinction of having the stop with the most entering passengers, St. Mary (2,300), and the stop with the fewest, Winchester (87). Boardings at Coolidge Corner (2,068) also exceeded 2,000. The terminal stop at Cleveland Circle (1,078) is just over the thousand mark. All other stops were considerably below the one thousand level.

6. Southwest/Orange Line

The number of entering passengers and the number of prepaid pass users by station for this corridor/line segment are presented in Table III-7. Forest Hills, the terminal station, had the most entering passengers (11,042). This figure is the second highest, behind only Harvard's, for outlying corridor stations, and the fifth highest figure for all stations in the rapid transit system. Dudley, with 8,022 entering passengers, is also of systemwide significance, ranking seventh among outlying corridor stations and in the top fifteen stations overall.

Of all corridor/line segments, this one had the highest percentage of prepaid pass usage. At all four stations, it equaled or exceeded the systemwide average. In number of pass users, Forest Hills (2,012) is second only to Harvard (2,850) among outlying corridor stations and third, behind Harvard and Park, among all stations. Egleston ranked highest in percentage of pass usage, at 21.5 percent, among corridor stations, followed by Forest Hills, at 18.2 percent. Only North Station (at 26.5 percent), where, at the time of data collection, a free transfer from commuter railroad to rapid transit was allowed to pass-holders, had a percentage of pass usage exceeding that of these two stations.

CORRIDOR: SOUTHWEST

LINE SEGMENT: ORANGE LINE SOUTH

Station Name	Fare Payment Method: Cash Fare	Fare Payment Method: Prepaid Pass	Total Passengers	Total Cash Fare
Forest Hills	9,030	2,012	11,042	$1,870.33
Green	1,434	171	1,605	278.01
Egleston	3,283	898	4,181	744.88
Dudley St.	6,817	1,205	8,022	1,361.94
SEGMENT SUBTOTAL	20,564	4,286	24,850	$4,255.16
CORRIDOR TOTAL	20,564	4,286	24,850	$4,255.16

NOTE: Green Line Arborway Branch within bus portion of survey.

BOARDING PASSENGERS BY FARE PAYMENT METHOD
COMPOSITE SURVEY DAY
BY CORRIDOR/LINE SEGMENT AND STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE III-7

7. South Shore/Red Line

The distribution of entering passengers and prepaid pass users by station on the three line segments within the South Shore Corridor are presented in Table III-8. The stations with the most entering passengers are the terminal stations of the two branches within the corridor. Ashmont Station, with 10,269, is the highest in the corridor and the third highest of all outlying corridor stations. Quincy Center, with 9,412, is the second highest in the corridor, fifth among outlying stations, and twelfth overall.

Prepaid pass usage was somewhat below the systemwide average in this corridor. Ashmont station with 1,245 users (12.1 percent) was the only station with more than 1,000. Ashmont, North Quincy (12.1 percent) and Savin Hill (10.8 percent) are the only stations at which the percentage of pass users reached or exceeded the systemwide average. Wollaston Station (10.3 percent) is the only other station that had a figure over 10 percent. Columbia Station (5.3 percent) is the lowest of all.

8. Downtown Boston/Downtown Stations

The total entering passenger and prepaid pass user figures for this corridor/line segment are presented in Table III-9. This Downtown Boston segment has more stations (26--at 20 geographic locations) than any other. Because of the concentration of employment in this area, these stations, in general, were the highest in the system in overall usage. In total entering passengers, Washington and Park stations, with 25,559 and 24,723, respectively, ranked one and two in the system. The other stations with more than 10,000 entering passengers are State (13,635), Copley (13,246), Arlington (11,007), and Government Center (10,799). South Station (9,810), North Station (7,256), and Haymarket (8,066) are below the 10,000 figure, but serve as major transfer points between primary public transportation modes. For North and South stations, this is from commuter railroad and, for Haymarket, from express bus service.

The highest number of prepaid pass users (3,103) for the entire rapid transit system occurred at Park Street Station. More than 1,500 passengers used passes when entering at four other stations. These stations were North Station (1,920), Copley (1,882), Washington (1,734), and South Station (1,558).

The overall percentage of pass users entering the Downtown stations was close to the systemwide average. At the upper end, North Station (26.5 percent) had, by far, the highest usage. South Station (15.9 percent) is also high. The free transfer from commuter railroad to rapid transit existing at the time of data collection is undoubtedly one of the major reasons for these high percentages. Charles and Park Street stations are the two other stations at which the systemwide average was exceeded. On the lower end, a number of stations had percent usage figures

CORRIDOR: SOUTH SHORE

LINE SEGMENT: RED LINE SOUTH STEM

Station Name	Fare Payment Method: Cash Fare	Prepaid Pass	Total Passengers	Total Cash Fare
Andrew	4,332	426	4,758	$ 919.92
Broadway	3,554	320	3,874	795.29
SEGMENT SUBTOTAL	7,886	746	8,632	$ 1,715.21

LINE SEGMENT: ASHMONT BRANCH

Station Name	Fare Payment Method: Cash Fare	Prepaid Pass	Total Passengers	Total Cash Fare
Ashmont	9,024	1,245	10,269	$ 2,009.38
Shawmut	1,115	85	1,200	262.23
Fields Corner	4,382	329	4,711	971.41
Savin Hill	1,460	176	1,636	334.13
Columbia	3,978	222	4,200	917.75
SEGMENT SUBTOTAL	19,959	2,057	22,016	$ 4,494.90

LINE SEGMENT: QUINCY BRANCH

Station Name	Fare Payment Method: Cash Fare	Prepaid Pass	Total Passengers	Total Cash Fare
Quincy Center	8,608	804	9,412	$ 3,628.40
Wollaston	3,242	372	3,614	1,229.56
North Quincy	3,853	535	4,388	1,483.42
SEGMENT SUBTOTAL	15,703	1,711	17,414	$ 6,341.38
CORRIDOR TOTAL	43,548	4,514	48,062	$12,551.49

NOTE: Mattapan High-Speed Trolley within bus portion of survey.

BOARDING PASSENGERS BY FARE PAYMENT METHOD
COMPOSITE SURVEY DAY
BY CORRIDOR/LINE SEGMENT AND STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE III-8

CORRIDOR: DOWNTOWN BOSTON

LINE SEGMENT: DOWNTOWN STATIONS

Station Name	Fare Payment Method: Cash Fare	Fare Payment Method: Prepaid Pass	Total Passengers	Total Cash Fare
North Station	5,336	1,920	7,256	$ 1,203.59
Haymarket	7,376	790	8,066	1,593.08
State	12,843	792	13,635	2,673.78
Washington	23,825	1,734	25,559	5,207.92
Essex	5,297	606	5,903	1,227.70
Dover	2,894	143	3,037	622.44
Northampton	3,459	252	3,711	744.73
Government Center	10,051	748	10,799	2,340.95
Park	21,620	3,103	24,723	4,964.47
Boylston	4,358	451	4,809	974.76
Arlington	9,852	1,155	11,007	2,302.43
Copley	11,364	1,882	13,246	2,671.02
Auditorium	7,232	747	7,979	1,685.88
Prudential	2,003	163	2,166	478.59
Symphony	1,957	107	2,064	417.05
Aquarium	1,561	120	1,681	318.38
Bowdoin	1,887	126	2,013	444.01
Charles	5,908	746	6,654	1,386.45
South Station	8,252	1,558	9,810	1,940.36
SEGMENT SUBTOTAL	146,975	17,143	164,118	$33,197.59
Science Park			722	
CORRIDOR TOTAL	146,975	17,143	164,840	$33,197.59
SYSTEM GRAND TOTAL	NA	NA	369,456	NA

BOARDING PASSENGERS BY FARE PAYMENT METHOD
COMPOSITE SURVEY DAY
BY CORRIDOR/LINE SEGMENT AND STATION
MBTA Rapid Transit Passenger Data Collection Program

TABLE III-9

of only about one-half the systemwide average. Included in this group are several major stations--State (5.7), Washington (6.8), and Government Center (6.7)--as well as several more minor ones.

a. TRANSFER STATION RESULTS

At nine locations in the rapid transit system, passengers can made a free transfer between lines or between two branches of the same line. The nine locations and the transfers possible are listed in Table III-10. Six of these nine locations contain twelve major Downtown stations (in that they each serve two lines). One other location is also in Downtown Boston, while the other two are just outside Downtown Boston in the Fenway and South Boston.

These nine locations, and their combined fifteen rapid transit stations, are singled out for special attention due to the transfer role they play in addition to serving as the normal points of passenger embarking and debarking.

Movements at the six locations/twelve station within Downtown Boston (North Station, Haymarket, Government Center, State, Washington and Park Street) where line-to-line transfers can be made are summarized in Table III-11. Of all the trips made on the rapid transit system during the composite survey day, almost three-quarters (74 percent) either began, ended, or transferred at one of these stations. The breakdown between these three categories of movement at the six/twelve stations in total is a remarkably even one-third, one-third, and one-third (90,038 trips began, 91,774 ended, and 93,102 transferred).

As previously reported, Washington Station had the most entering passengers with 25,559. In addition, Washington also ranked first in number of exiting passengers, with 22,755. When these two figures are combined with the 20,436 transfer movements, the total activity level within the station is 68,750 movements. This total activity is also spread quite evenly across the three types of movement.

While Washington is the highest in two out of three categories of movement, it ranks a distant second to Park Street Station, in transfer movements (49,541) and total activity (96,916 movements). The importance of accounting for transfer movements is clearly shown, as they make up over 51 percent of Park Street's total activity.

At Government Center, with 30.5 percent (11,305) transfers, and Haymarket, with 25.3 percent (4.963) transfers, the percentages of transfers are also substantial. State Station has a larger number of transfers (5,949) than Haymarket, but they make up only 16 percent of the total activity within the station.

Movements at the three stations where branch-to-branch transfers can be made are summarized in Table III-12. The station with both the largest number (1,568) and the largest percentage (5.4) of transfers was Arlington. Andrew ranks next in both number and percentage. While possible at Kenmore, transfers have little impact on that station.

Location	Line (Branch)-to-Line (Branch) Movement
North Station	Green-to-Orange & Orange-to-Green
Haymarket	Green-to-Orange & Orange-to-Green
Government Center	Blue-to-Green & Green-to-Blue
State	Blue-to-Orange & Orange-to-Green
Washington	Orange-to-Red & Red-to-Orange
Park	Green-to-Red & Red-to-Green
Kenmore	Surface Green-to-Surface Green
Arlington	Surface Green-to-Central Subway Green
Andrew	Ashmont Branch-to-Quincy Branch

LOCATION OF TRANSFER POINTS
MBTA RAPID TRANSIT SYSTEM
MBTA Rapid Transit Passenger Data Collection Program

TABLE III-10

Station Name	Passenger Movements			
	Entering	Exiting	Transfer-ing	Total
North Station	7,256	7,346	908	15,510
Haymarket	8,066	6,557	4,963	19,586
Government Center	10,799	14,965	11,305	37,069
State	13,635	17,499	5,949	37,083
Washington	25,559	22,755	20,436	68,750
Park	24,723	22,652	49,541	96,916
SIX-STATION TOTAL	90,038	91,774	93,102	274,914

SUMMARY OF TOTAL STATION ACTIVITY
OVERALL COMPOSITE DAY
MULTI-LINE TRANSFER STATIONS
MBTA Rapid Transit Passenger Data Collection Program

TABLE III-11

Station Name	Passenger Movements			
	Entering	Exiting	Transfer-ing	Total
Kenmore	9,473	9,285	150	18,908
Arlington	11,007	16,985	1,586	29,578
Andrew	4,758	4,453	395	9,606

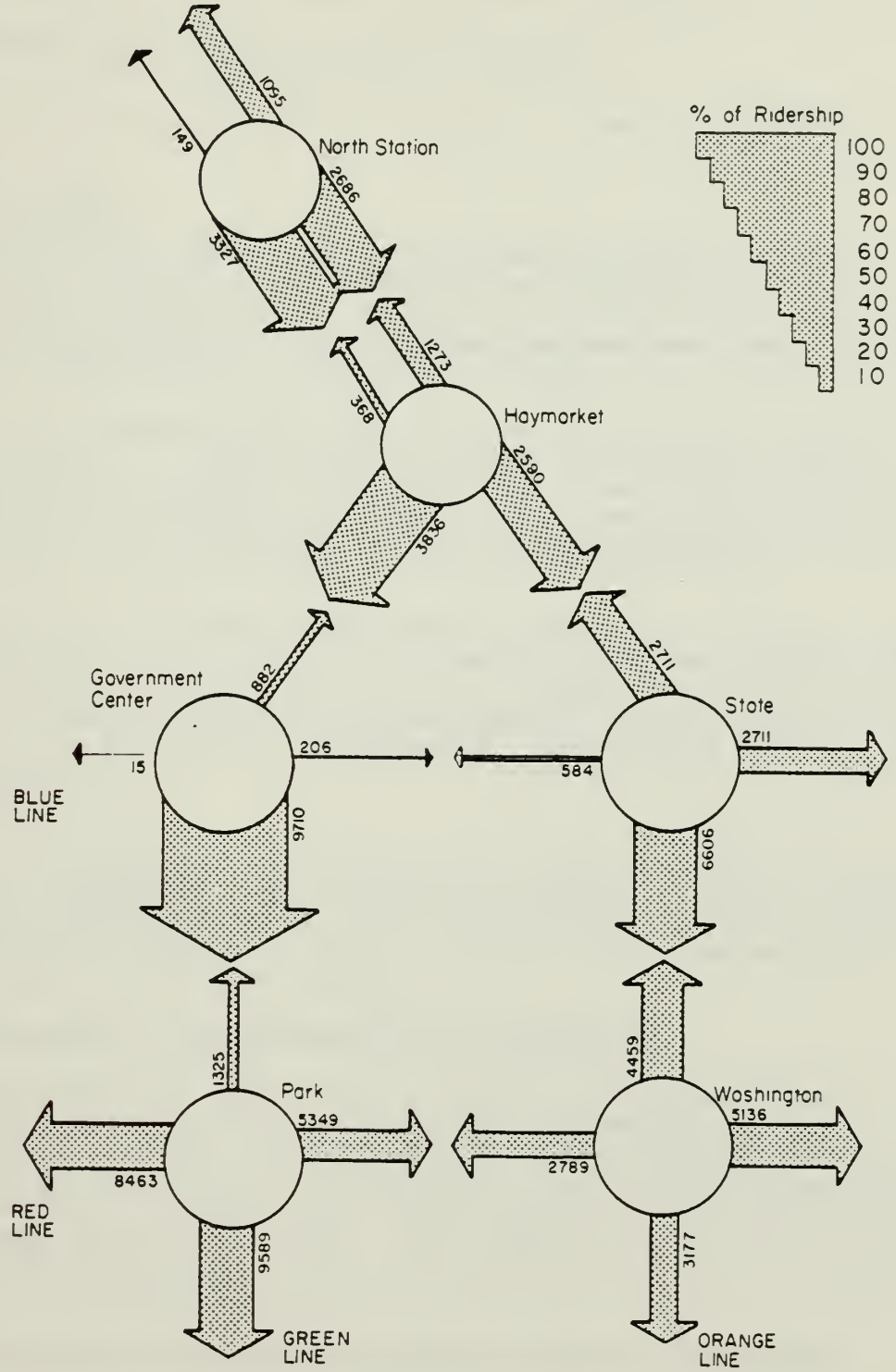
SUMMARY OF TOTAL STATION ACTIVITY
OVERALL COMPOSITE DAY
BRANCH LINE TRANSFER STATIONS
MBTA Rapid Transit Passenger Data Collection Program

TABLE III-12

b. BOARDING PASSENGERS BY LINE--MULTI-LINE STATIONS

To this point, all entering passenger figures for the six/twelve stations which share multiple transit line segments have been for both lines combined. In Figure III-4 of this section, these entry figures are broken down to transit line of boarding and, further, to direction of movement along that line.

The boarding values depicted in Figure III-4 show, for example, that at Park Street Station 56 percent of boardings are to the Red Line and 44 percent are to the Green Line. For the remaining stations the percentage breakdowns are: Washington--51 percent Red and 49 percent Orange; State--76 percent Orange and 24 percent Blue; Government Center--98 percent Green and 2 percent Blue; Haymarket--52 percent Green and 48 percent Orange; and North Station--52 percent Orange and 48 percent Green.



ENTERING PASSENGERS - MULTI-LINE STATIONS
COMPOSITE SURVEY DAY
DOWNTOWN BOSTON
MBTA Rapid Transit Passenger Data Collection Program

FIGURE III-4

IV. PASSENGER QUESTIONNAIRE SURVEY RESULTS

A. INTRODUCTION

This chapter follows the same general outline as that of Chapter III. It reports on the results obtained from the passenger questionnaire survey portion of the data collection activities described in Chapter II. The information has been compiled for the composite survey day (as discussed in Chapter I of this report).

Data are presented for all portions of the rapid transit system and, except for the Arborway Branch,[1] the surface portion of the Green Line. At specific points, the Green Line surface operation is treated somewhat differently than the subway/elevated portion of the rapid transit system, because of differences in operation which, in turn, caused differences in data collection.

Socioeconomic characteristics are presented in part B, travel characteristics in part C. The presentation format within each part is to first report values for the system as a whole and then to make similar reports for the corridor/line segments and their stations. The corridor/line segments-- geographic segments of the rapid transit system--are defined in Table II-4 and in Figure II-6 and Figure II-7.

The socioeconomic characteristics presented are age, sex, occupation, household size, household income, household automobile ownership, and frequency of rapid transit usage. The travel characteristics presented are trip purpose, fare payment method, system usage, and mode of access.

B. SOCIOECONOMIC CHARACTERISTICS OF PASSENGERS

This subsection sets forth a detailed examination of the socioeonomic characteristics of the MBTA ridership on the composite survey day. Where possible, these characteristics are compared with comparable socioeconomic characteristics derived from U.S. Census data for the total population of the Boston Standard Metropolitan Statistical Area. This examination is first undertaken for the system as a whole and then repeated for each corridor/line segment and its stations.

1. Systemwide Socioeconomic Characteristics of Passengers

The following general conclusions can be drawn from the passenger questionnaire survey results concerning the socioeconomic characteristics of the riding public.

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[1] Data collection for the Arborway Branch of the Green Line was not included in the Rapid Transit Survey phase of the Systemwide Passenger Data Collection Program. The Arborway Branch was, instead, included within the Bus System phase of the data collection work.

- Females constitute a somewhat greater proportion of the ridership than do males.

- Adults between the ages of 16 and 44 constitute more than three-quarters of the ridership. Children and adults over the age of 60 constitute a far smaller percentage of the ridership than of the general public.

- While many riders are dependent on the rapid transit system to provide them with mobility, especially for a given trip, a majority do hold driver's licenses.

- Almost one-half of the ridership is from households that have a total annual income of less than $15,000. In fact, over one-fifth of the ridership is drawn from households earning less than $8,000 annually.

- Little difference is apparent between the MBTA rider and the general public in number of automobiles owned per household and in household size.

- Employed persons and students constitute almost nine-tenths of the ridership.

These highlights are expanded upon in some detail in the following sections.

a. AGE

The distribution of MBTA riders' ages, as compared to those of the general public in the Boston SMSA, is presented in Table IV-1. On first glance, there does not appear to be much correlation between the two distributions. However, when the under 16 age group is excluded from both distributions, as in Table IV-2, a much closer correspondence--although with significant differences--can be observed. (The rationale for excluding the under-16 age group is that persons from this group do not appear to be represented in the results of the questionnaire survey. The reason for this lack of representation is at least twofold: those under the age of 10 are not capable of responding, even if present in the transit-riding public, while those in the 10-to-16 age group, present in the riding public in some number, have not chosen to respond.)

Rapid transit users are somewhat younger than residents of the region in general; e.g., after excluding those under 16, over 75 percent of rapid transit riders are between the ages of 16 and 44, whereas only 54 percent of residents of the SMSA are within this age category. Less than 5 percent of transit riders are elderly (age 65 or over), whereas 15 percent of thes residents of the SMSA are classified as elderly.

Riders boarding at stations of the Blue Line, who average 36 years of age, are the oldest of those entering the system. However, while the Blue Line has the oldest riders in general, the Cleveland Circle Branch of the Green Line has the highest proportion of riders (7 percent) who are 65 or older. This is

Age Range	Expanded Survey		Boston SMSA	
	Number	Percent	Number	Percent
Under 16	6,170	1.7	781,654	28.4
16 - 24	110,292	30.8	443,099	16.1
25 - 44	160,898	44.9	634,999	23.1
45 - 59	53,805	15.0	458,674	16.7
60 - 64	13,263	3.7	125,389	4.5
65 & over	14,003	3.9	309,885	11.2
TOTAL	358,421	100.0	2,753,700	100.0

COMPARISON OF AGE DISTRIBUTIONS
EXPANDED QUESTIONNAIRE SURVEY TO BOSTON SMSA
MBTA Rapid Transit Passenger Data Collection Program

TABLE
IV-1

Age Range	Expanded Survey		Boston SMSA	
	Number	Percent	Number	Percent
16 - 24	110,292	31.3	443,099	22.5
25 - 44	160,898	45.7	634,999	32.2
45 - 59	53,805	15.3	458,674	23.2
60 - 64	13,263	3.8	125,389	6.4
65 & over	14,003	4.0	309,885	15.7
TOTAL	352,251	100.0	1,972,046	100.0

COMPARISON OF AGE DISTRIBUTIONS
(EXCLUDING UNDER 16 AGE CATEGORY)
EXPANDED QUESTIONNAIRE SURVEY TO BOSTON SMSA
Data Collection Program

TABLE
IV-2

not a startling revelation, since the route serves the most populous section of Brookline, a town where 20 percent of the population is 65 or older.

b. SEX

As is true for most transit systems around the country, the majority of passengers are female (55 percent), as is shown in Table IV-3. Note that this percentage of females is essentially the same as that for the SMSA in general (53 percent).

c. OCCUPATION

The survey questionnaire made allowance for riders to classify themselves by six occupation classes. Table IV-4 shows that students and employed persons account for 27 percent and 65 percent, respectively, of all passengers. This is not surprising, since approximately two-thirds of all trips (not necessarily home-based work) had at least one end of the trip at the place of work and approximately another one-fifth and at least one end at school.

The Boston College Branch of the Green Line carried by far the highest proportion of students. Almost 50 percent of the riders boarding at stations along this branch were college students. Indeed, the Green Line carried one-half of all college students who used the rapid transit system.

d. HOUSEHOLD SIZE

As shown in Table IV-5, there is practically no difference between the household size of rapid transit riders and that of residents of the SMSA in general. The average household size for rapid transit riders was 2.9 persons versus 3.1 for the SMSA as a whole. People who used the Boston College Branch had the smallest household size (2.5 persons) and those who used the southern section of the Red Line had the largest (3.34 persons).

e. HOUSEHOLD INCOME

The annual household income of rapid transit users and of residents of the SMSA in general are compared in Table IV-6. As a group, transit users were slightly more affluent (average household income is $17,500) than the residents of the SMSA in general (with an average yearly income of $16,700). However, transit users were not concentrated into any one income category.

Many of the riders are from fairly affluent households in that more than 10 percent had household incomes of $20,000 to $25,000 and about 25 percent had incomes in excess of $25,000. At the other extreme, about 20 percent of the riders had household incomes of less than $8,000 per year. The latter result was owing, at least in part, to the large proportion of riders who were college students and so have generally lower incomes.

	Expanded Survey		Boston SMSA	
Category	Number	Percent	Number	Percent
Female	192,841	54.8	1,450,544	52.7
Male	159,158	45.2	1,303,156	47.3
TOTAL	351,998	100.0	2,753,700	100.0

COMPARISON OF SEX DISTRIBUTIONS
EXPANDED QUESTIONNAIRE SURVEY TO BOSTON SMSA
MBTA Rapid Transit Passenger Data Collection Program

TABLE
IV-3

Category	Expanded Survey		Boston SMSA	
	Number	Percent	Number	Percent
Grade or High School	16,721	4.7	Not Available	--
College	78,145	22.3	Not Available	--
Housewife	14,525	411	338,499	22.3
Retired	7,980	2.3	Not Available	--
Employed	227,685	64.9	1,136,474	75.0
Unemployed	5,918	1.7	41,468	2.7
TOTAL	350,964	100.0	1,516,441	100.0

COMPARISON OF OCCUPATION DISTRIBUTION
EXPANDED QUESTIONNAIRE SURVEY TO BOSTON SMSA
MBTA Rapid Transit Passenger Data Collection Program

TABLE
IV-4

Household Size	Expanded Survey		Boston SMSA	
	Number	Percent	Number	Percent
1	68,736	19.5	171,064	19.9
2	110,853	31.5	242,507	28.2
3	58,107	16.5	142,076	16.5
4	48,698	13.8	125,163	14.6
5	30,443	8.7	84,786	9.9
6 & over	35,295	10.0	94,105	10.9
TOTAL	352,132	100.0	859,701	100.0

COMPARISON OF HOUSEHOLD SIZE DISTRIBUTION
EXPANDED QUESTIONNAIRE SURVEY TO BOSTON SMSA
MBTA Rapid Transit Passenger Data Collection Program

TABLE IV-5

Income Range	Expanded Survey		Boston SMSA*	
	Number	Percent	Number	Percent
Under $5,000	31,827	10.1	40,217	6.1
$ 5,000-$ 8,000	32,694	10.3	44,677	6.7
$ 8,000-$12,000	50,991	16.1	94,478	14.3
$12,000-$15,000	37,145	11.8	42,561	6.4
$15,000-$20,000	46,373	14.7	133,672	20.2
$20,000-$25,000	40,033	12.7	106,906	16.2
Over $25,000	76,869	24.3	199,139	30.1
TOTAL	315,917	100.0	661,650	100.0

*Updated to 1978

COMPARISON OF INCOME DISTRIBUTION
EXPANDED QUESTIONNAIRE SURVEY TO BOSTON SMSA
MBTA Rapid Transit Passenger Data Collection Program

TABLE IV-6

f. AUTO OWNERSHIP

Just over one-quarter of the people who used the rapid transit system lived in households which did not own any automobiles, as is shown in Table IV-7. This signifies that more than a fourth of all passengers were "captive" riders; that is, they had no other means of transportation (outside of taxi) and must rely on public transportation service. One should note that although women represented just over one-half of the total ridership, they accounted for almost two-thirds of those riders who come from autoless households. Two-fifths of all ridres were drawn from one automobile households. A significant number of these people may also have been captive riders, especially if another member of the household used that car most of the time.

The number of automobiles owned by households of transit riders did not vary greatly from the number owned by households in the SMSA in general. Both the household of the "typical" transit rider and that of the "typical" SMSA resident owned 1.1 automobiles. Therefore, transit riders, as a whole, appear to have been as mobile as other residents of the region.

2. Corridor/Line Segment Socioeconomic Characteristics of Passengers

In this section, selected ridership characteristics from among those just reported at the systemwide level are disaggregated and reported by individual corridor/line segments. The selected characteristics are age and sex, percentage of riders who come from households that did not own an automobile, and average household income.

a. NORTH SHORE/BLUE LINE

The North Shore/Blue Line includes the stations from Wonderland in Revere to Maverick Square located on the Boston Waterfront in East Boston. This line segment serves three distinctively different market areas; including inner city neighborhoods, older urban areas, and suburban areas to the north and west.

Selected socioeconomic characteristics of riders are given in Table IV-8. Note that at Suffolk Downs and Airport stations a substantial majority of boarders were male. Also note that one-third of those who board at Suffolk Downs were elderly and that several of the other stations had significant proportions of boarders who were between 60 and 64 years of age. Boarders at stations along the inner portion of the line seem to have been more dependent upon transit than those who used the stations on the outer portion of the line. The extended market area of Wonderland Station is evident from comparison of its figures for average household income and percentage of riders from autoless households with those of the other stations.

b. NORTHERN/ORANGE LINE

The Orange Line North in the Northern Corridor includes the stations from Oak Grove to Community College and serves directly both the older urban area of Charlestown and the suburban communities

Autos Owned Per Household	Expanded Survey Number	Expanded Survey Percent	Boston SMSA Number	Boston SMSA Percent
0	96,764	27.3	206,011	24.0
1	153,072	43.1	420,846	49.0
2	78,039	22.0	199,485	23.2
3 or more	27,170	7.0	33,370	3.8
TOTAL	355,045	100.0	859,712	100.0

COMPARISON OF AUTOMOBILES OWNED
EXPANDED QUESTIONNAIRE SURVEY TO BOSTON SMSA
MBTA Rapid Transit Passenger Data Collection Program

TABLE IV-7

Boarding Station	Percent Male	Percent Female	PERCENTAGES <16 yrs.	16-24	25-44	45-59	60-64	65 +	Percent Autoless	Average H.H. Income	Percent Prepaid Pass Usage
Wonderland	46	54	1	26	47	22	4	1	5	$20,250	9
Revere	48	52	1	28	38	22	6	6	24	17,000	8
Beachmont	36	64	1	27	38	18	8	7	18	17,100	13
Suffolk Downs	65	35	0	14	35	0	16	35	50	15,500	15
Orient Heights	39	61	5	25	36	26	5	3	17	17,500	12
Wood Island	51	49	3	23	47	20	5	3	31	18,900	11
Airport	61	39	5	39	39	14	2	2	32	18,100	5
Maverick	41	59	1	30	38	20	6	4	33	14,900	16

SOCIO-ECONOMIC CHARACTERISTICS OF ENTERING PASSENGERS
NORTH SHORE/BLUE LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

TABLE IV-8

of Malden and Medford. Communitites stretching northward to the New Hampshire line are indirectly served by park-ride facilities, particularly at Wellington Station.

In Table IV-9, selected socioeconomic characteristics of riders using this line segment are detailed. The split of riders between male and female was fairly consistent from station to station, females predominating in all cases. Stations that stand out owing to a difference in one characteristic are Oak Grove, with its relatively low percentage of riders who were "captive" (less than 10 percent from autoless households), and Community College, with its high percentage of riders in the 16-24 age group.

c. NORTHWEST/RED LINE

The Northwest/Red Line segment includes the stations from Harvard Square to Kendall Square. The segment serves the City of Cambridge and other suburban communities, such as Arlington, Belmont and Watertown, to the north and west.

Selected socioeconomic characteristics of riders boarding at stations along this segment are presented in Table IV-10. By station, these characteristics are quite similar among themselves and to systemwide averages. The only points of note are the high male to female ratio at Kendall (60 percent male) and the somewhat lower socioeconomic level of passengers entering at Central Station, as reflected in average household income and percentage of autoless households.

d. NORTHWEST/GREEN LINE

Rapid transit service is also provided to a portion of the Northwest Corridor by the Central Subway's Lechmere terminal, which is located in eastern Cambridge. Table IV-11 presents selected socioeconomic characteristics of riders boarding this segment (station). There is little to differentiate these riders, in terms of socioeconomic characteristics, from the general rider of the system.

e. WESTERN/GREEN LINE

The Green Line, which is the most complex of the four rapid transit lines, has four major segments. These are the Central Subway, the Boston College Branch, the Cleveland Circle Branch, and the Riverside Branch. A portion of the Central Subway segment and all of the three branch routings lie in the Western Corridor.

The Riverside Branch runs on a grade-separated private right-of-way from Fenway Park in Boston, through Brookline, to Route 128 in Newton. This route attracts some passengers from the colleges located in the Fenway area, but the majority are Brookline and Newton residents. One should note that Riverside Station also attracts passengers from many of the suburbs to the west of Boston. The Cleveland Circle Branch starts at the Brookline-Boston border and runs on a center-of-road median along Beacon Street, through Brookline, to Cleveland Circle in Boston. The majority of

Boarding Station	Percent Male	Percent Female	PERCENTAGES <16 yrs.	16-24	25-44	45-59	60-64	65+	Percent Autoless	Average H.H. Income	Percent Prepaid Pass Usage
Oak Grove	44	56	1	29	38	23	4	4	7	$21,250	14
Malden	38	62	1	30	42	18	5	4	21	16,250	20
Wellington	40	60	1	28	35	26	6	3	14	18,400	11
Sullivan	42	58	2	26	41	21	5	4	23	17,000	17
Community College	44	56	1	49	34	7	6	3	22	17,650	10

SOCIO-ECONOMIC CHARACTERISTICS OF ENTERING PASSENGERS
NORTHERN/ORANGE LINE
COMPOSITE SURVEY DAY
UMTA Rapid Transit Passenger Data Collection Program

TABLE IV-9

Boarding Station	Percent Male	Percent Female	PERCENTAGES <16 yrs.	16-24	25-44	45-59	60-64	65 +	Percent Autoless	Average H.H. Income	Percent Prepaid Pass Usage
Harvard	49	51	1	31	52	11	3	3	29	$17,800	13
Central	48	52	1	31	57	9	2	1	34	15,650	13
Kendall	60	40	0	30	52	14	2	2	28	19,100	11

SOCIO-ECONOMIC CHARACTERISTICS OF ENTERING PASSENGERS
NORTHWEST/RED LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

TABLE IV-10

Boarding Station	Percent Male	Percent Female	PERCENTAGES 16 yrs.	16-24	25-44	45-59	60-64	65 +	Percent Autoless	Average H.H. Income	Percent Prepaid Pass Usage
Lechmere	43	57	1	28	46	17	3	5	32.9	$16,550	14.7%

SOCIO-ECONOMIC CHARACTERISTICS OF ENTERING PASSENGERS
NORTHWEST/GREEN LINE
COMPOSITE SURVEY DAY
...Rapid Transit Passenger Data Collection Program

TABLE IV-11

passengers on this route are Brookline residents who live in apartment buildings in the Beacon Street area. However, the route also attracts some Boston College and Boston University students. The Boston College Branch starts at Blandford Street and Commonwealth Avenue in Boston and runs over a center-of-road median along Commonwealth Avenue to Boston College on the Boston-Newton border. Riders are attracted from Boston University and Boston College dormitories, classrooms, and administrative buildings; from the many apartment buildings in the Commonwealth Avenue area; and from other areas within the City of Newton.

Selected socioeconomic characteristics of those who board at the stations along these segments are detailed in Table IV-12. The total market area of every segment contained a large number of households that were heavily dependent on transit. The outer portion of the Riverside Branch, which has a truly suburban market, was the only exception. Boarders at stations in the Central Subway and the outer portion of the Riverside Branch were almost evenly divided between males and females. On the other hand, the overwhelming majority of those who boarded at stations on the remainder of the Riverside Branch and along the Cleveland Circle and Boston College branches are female. The predominance of college students, especially along the Cleveland Circle and Boston College branches, is evident in the somewhat younger ages of riders and the lower household incomes reported.

f. SOUTHWEST/ORANGE LINE

The southern portion of the Orange Line provides transit service to this radial travel corridor. The corridor/line segment includes stations from Forest Hills at the southern terminus to Dudley Street just outside Downtown Boston. The line segment serves mostly inner city neighborhoods. However, one should remember that the majority of people who board at Forest Hills Station are from suburban communities to the south and west. The population of these communities is substantially different from that of the city neighborhoods which provide the ridership boarding at the remaining three stations, as shown in the values of Table IV-13.

Egleston and Dudley stations attracted extremely transit dependent riders; almost one-half of those who boarded at Dudley lived in autoless households. Dudley also attracted sigificant proportions (as compared with other stations) of riders who are less than 16 years of age. Significant proportions of those who board at Forest Hills and Green stations were elderly.

g. SOUTH SHORE/RED LINE

The South Shore/Red Line includes three separate segments: the Red Line Stem, composed of Broadway and Andrew stations; the Ashmont Branch, composed of stations from Ashmont to Columbia, inclusive; and the Quincy Branch, which, at the time of surveying, was composed of the three Quincy stations. The Stem and the Ashmont Branch serve mostly inner city neighborhoods, although Ashmont Station itself does attract riders from more suburban communities. The Quincy Branch then included the Quincy Center, Wollaston, and North Quincy stations, which served the city of Quincy and South Shore suburban communities.

Boarding Station	Percent Male	Percent Female	PERCENTAGES <16 yrs.	16-24	25-44	45-59	60-64	65 +	Percent Autoless	Average H.H. Income	Percent Prepaid Pass Usage
Segment: Green Line--Stem											
Kenmore	44	56	1	50	38	7	2	2	43	$15,000	13%
Segment: Green Line--Cleveland Circle Branch											
St. Mary's	44	56	0	39	45	6	2	7	39	$16,000	5%
Coolidge Corner	34	66	5	31	44	11	2	7	40	15,500	13
Cleveland Circle	39	61	2	46	37	6	2	8	44	12,550	6
Remainder of Branch	31	69	1	37	40	12	2	7	33	14,800	17
Segment: Green Line--Boston College Branch											
Blandford	34	66	1	56	39	2	1	1	38	$13,100	11%
Harvard Avenue	42	58	2	58	28	10	2	1	40	10,600	6
Boston College	37	63	1	61	27	6	1	4	30	17,500	3
Remainder of Branch	36	64	1	52	39	4	1	3	45	11,600	12

SOCIO-ECONOMIC CHARACTERISTICS OF ENTERING PASSENGERS
WESTERN/GREEN LINE - CENTRAL SUBWAY, BOSTON
COLLEGE BRANCH AND CLEVELAND CIRCLE BRANCH
MBTA Rapid Transit Passenger Data Collection Program

TABLE IV-12

Segment: Green Line--Riverside Branch

Boarding Station	Percent Male	Percent Female	PERCENTAGES <16 yrs.	16-24	25-44	45-59	60-64	65 +	Percent Autoless	Average H.H. Income	Percent Prepaid Pass Usage
Riverside	49	51	4	30	40	16	3	7	10	$20,950	3
Woodland	47	53	2	37	37	15	3	6	13	19,350	3
Waban	57	43	6	22	36	16	5	16	8	26,100	5
Eliot	54	46	1	20	54	18	1	6	11	24,450	14
Newton Highlands	51	49	14	22	39	13	6	7	11	22,400	7
Newton Ct.	38	62	11	44	32	11	1	1	12	24,050	5
Chestnut Hill	36	64	0	41	41	9	5	4	7	23,000	4
Reservoir	44	56	4	44	39	8	2	5	30	18,500	9
Beacons-field	39	61	6	41	42	6	5	1	16	21,850	6
Brookline Hills	45	55	13	50	25	5	1	6	22	20,300	7
Brookline Village	43	57	3	36	47	11	2	1	33	15,850	9
Longwood	38	62	5	29	50	12	2	2	19	20,350	10
Fenway Park	37	63	1	58	31	6	2	3	43	14,050	4

SOCIO-ECONOMIC CHARACTERISTICS OF ENTERING PASSENGERS
WESTERN/GREEN LINE - RIVERSIDE BRANCH
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

TABLE IV-12 (Cont'd)

Boarding Station	Percent Male	Percent Female	PERCENTAGES <16 yrs.	16-24	25-44	45-59	60-64	65 +	Percent Autoless	Average H.H. Income	Percent Prepaid Pass Usage
Forest Hills	42	58	2	20	39	26	7	7	18	$18,100	17%
Green	55	45	3	27	57	7	2	5	26	14,100	5
Egleston	35	65	1	33	46	13	2	4	40	12,650	15
Dudley	36	64	7	32	45	11	3	2	46	12,800	17

SOCIO-ECONOMIC CHARACTERISTICS OF ENTERING PASSENGERS
SOUTHWEST/ORANGE LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

TABLE IV-13

Selected socioeconomic characteristics of those who used the different segments are detailed in Table IV-14. Note that a larger than average proportion of those who boarded at South Shore/ Red Line stations were female. The majority of Red Line Stem and Ashmont Branch stations had a larger than avaerage proportion of "captive" transit users. The Quincy Branch stations had smaller than average proportions of "captive" riders. Shawmut, Savin Hill, and Wollaston stations had relatively large proportions of very young boarders, whereas Ashmont, Savin Hill and Andrew had significant proportions of elderly boarders.

h. DOWNTOWN BOSTON/DOWNTOWN STATIONS

Selected socioeconomic characteristics of riders entering the system at Downtown stations are shown in Table IV-15. In all instances except the Blue Line portion of Government Center, the Orange Line portion of Washington, and the Blue Line portion of State Street, the boarders were fairly evenly divided between males and females. Somewhat larger proportions of elderly riders boarded the Green Line at Government Center, Haymarket, and North Station, the Blue Line at State Street, and the Red Line at Washington.

The residential aspect of the Back Bay area, heavily populated by college students and other young adults, is reflected by the high percentage of autoless households and the low household incomes among riders boarding at the Green Line stations which serve this portion of the Downtown.

C. TRAVEL CHARACTERISTICS OF PASSENGERS

This section sets forth a detailed examination of the daily travel characteristics of MBTA ridership as derived from the composite survey day results of the passenger questionnaire survey. The travel characteristics are first presented for the system as a whole. These systemwide totals are then disaggregated and reported at the corridor/line segment level.

1. Systemwide Travel Characteristics of Passengers

The following general statements can be made concerning the travel characteristics of the riding public as captured through the returns from the passenger questionnaire survey.

- Slightly more than one-half of the trips made by riders responding to the survey were made in order to travel from home to work or from work to home.

- Approximately four out of five riders paid a full adult fare upon entering the system. Prepaid passes were used by about 15 percent of the riders, with pass usage being concentrated principally within the morning and evening rush periods.

Boarding Station	Percent Male	Percent Female	PERCENTAGES <16 yrs.	16-24	25-44	45-59	60-64	65 +	Percent Autoless	Average H.H. Income	Percent Prepaid Pass Usage
Segment: Stem											
Andrew	39	61	2	32	37	17	5	8	39	$14,250	14%
Broadway	53	47	4	24	45	17	7	4	30	17,900	19
Segment: Ashmont Branch											
Ashmont	43	57	2	27	41	21	4	6	18	$18,850	12%
Shawmut	39	61	6	30	38	15	8	4	30	17,700	15
Fields Corner	40	60	3	36	34	20	4	3	38	13,050	13
Savin Hill	42	58	7	28	32	24	5	4	38	14,850	13
Columbia	45	55	3	39	41	11	4	2	29	15,250	12
Segment: Quincy Branch											
Quincy Ctr.	42	58	1	31	40	18	5	5	15	$19,350	12%
Wollaston	39	61	5	29	36	22	3	4	10	18,500	14
No. Quincy	39	61	1	27	41	22	5	5	8	20,350	14

SOCIO-ECONOMIC CHARACTERISTICS OF ENTERING PASSENGERS
SOUTH SHORE/RED LINE (RED LINE STEM,
ASHMONT BRANCH AND QUINCY BRANCH)
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

TABLE IV-14

Boarding Station	Percent Male	Percent Female	PERCENTAGES <16 yrs.	16-24	25-44	45-59	60-64	65 +	Percent Autoless	Average H.H. Income	Percent Prepaid Pass Usage
No. Station Orange	59	41	0	16	50	24	6	4	16	$22,150	45%
No. Station Green	61	39	1	32	41	15	6	6	15	18,100	33
Haymarket Orange	53	47	1	18	46	26	5	4	17	18,750	15
Haymarket Green	44	56	1	24	44	22	2	7	30	16,700	12
Government Blue	25	75	0	11	67	22	0	0	56	11,950	35
Government Green	50	50	2	27	49	13	2	7	23	20,150	16
State Blue	40	60	2	18	39	29	6	6	19	19,150	7
State Orange	47	53	1	23	48	20	5	4	17	20,350	15
Washington Red	44	56	1	21	46	20	6	6	18	20,850	15
Washington Orange	32	68	4	22	41	21	7	5	17	17,850	16

SOCIO-ECONOMIC CHARACTERISTICS OF ENTERING PASSENGERS
DOWNTOWN BOSTON/DOWNTOWN STATIONS
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

TABLE IV-15

Boarding Station	Percent Male	Percent Female	PERCENTAGES <16 yrs.	16-24	25-44	45-59	60-64	65+	Percent Autoless	Average H.H. Income	Percent Prepaid Pass Usage
Park Red	51	49	1	24	54	13	4	5	21	$20,050	15%
Park Green	43	57	1	33	49	12	3	3	35	17,500	12
Symphony	54	46	6	44	34	9	4	4	43	14,850	7
Prudential	48	52	0	36	49	11	3	2	40	17,850	9
Auditorium	54	46	1	44	44	7	2	3	44	15,250	11
Copley	45	55	1	39	46	11	1	3	33	16,450	15
Arlington	41	59	1	32	49	13	3	2	30	18,000	14
Boylston	46	54	1	35	50	8	3	3	35	15,550	16
Aquarium	54	46	3	19	53	18	3	4	26	21,200	11
Bowdoin	43	57	2	28	37	21	8	4	27	17,350	15
Northampton	46	54	0	31	53	14	2	1	38	15,150	15
Dover	58	42	5	34	41	10	6	3	35	15,850	11
Essex	52	48	1	24	50	19	3	3	21	17,450	18
So. Station	54	46	0	21	51	20	6	2	17	20,250	28
Charles	49	51	0	29	57	9	2	3	39	17,450	17

SOCIO-ECONOMIC CHARACTERISTICS OF ENTERING PASSENGERS
DOWNTOWN BOSTON/DOWNTOWN STATIONS
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

TABLE IV-15 (continued)

- More than one-half of the riders reported that they rode the system more than five times weekly. One-tenth reported that they normally rode no more than once per week.

- Approximately one-half of the riders reported that they had increased their usage of the system over the past 2-year time period. About one in ten riders reported having decreased their usage of the system during that same period.

- Approximately two-thirds of all riders accessed the system by walking to their station of boarding.

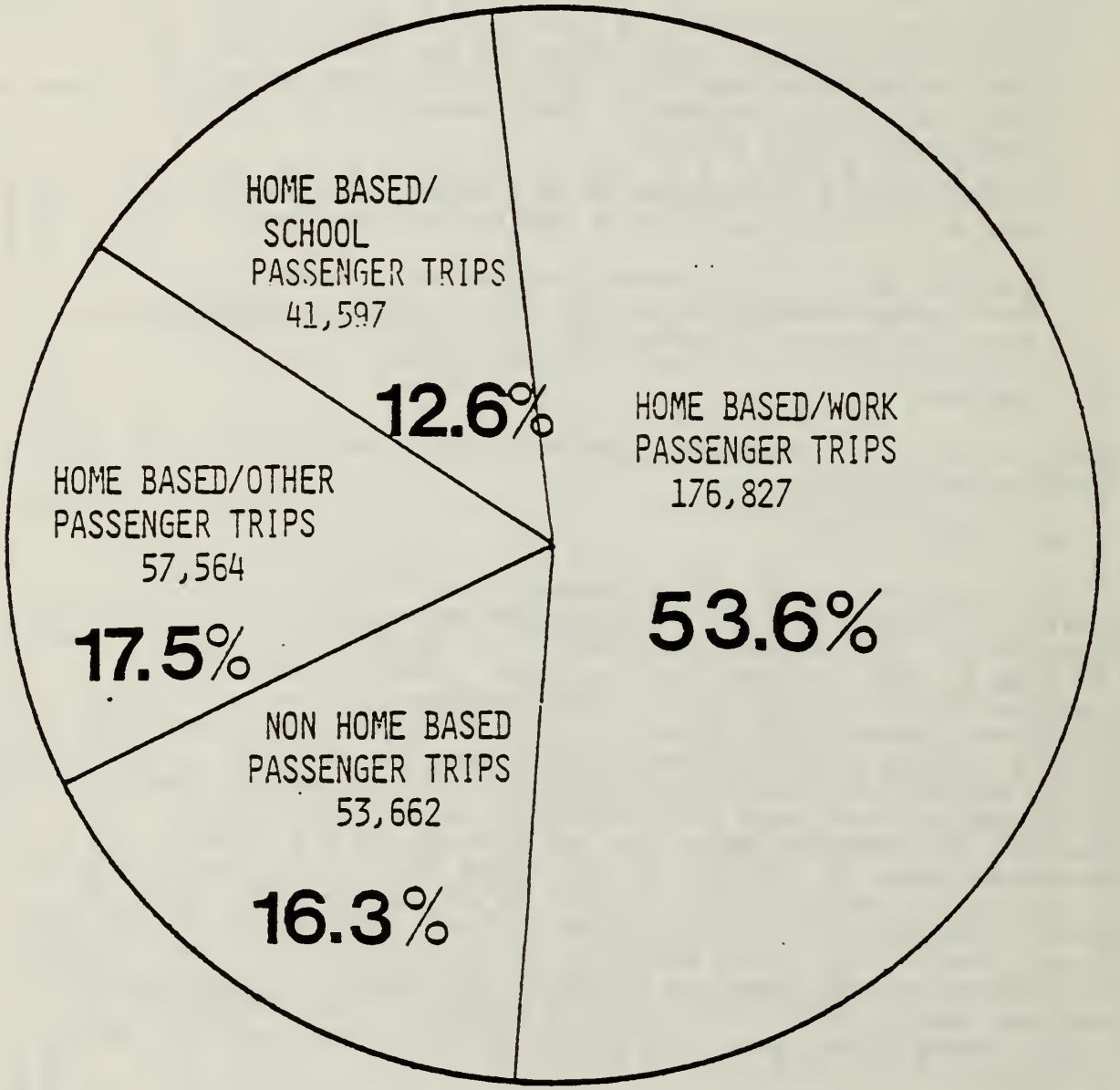
- Walking as an egress mode was even more predominant, with approximately three out of every four riders reaching their ultimate trip destination by walking from the station at which they alighted from the system.

These general highlights are expanded upon in some detail in the following subsections.

a. TRIP PURPOSE

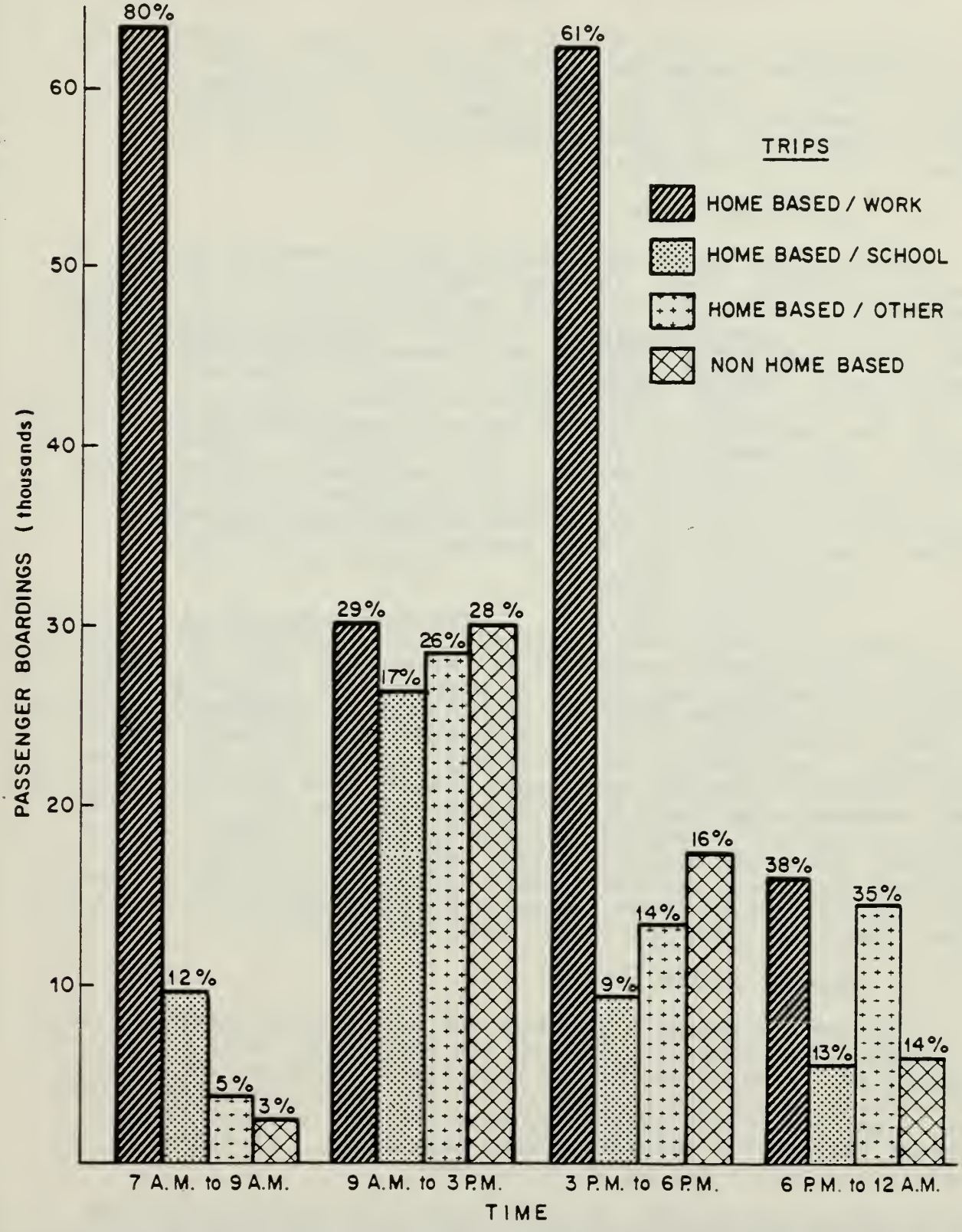
The proportions of trip purposes constituting the total universe of travel during the composite survey day is depicted in Figure IV-1. The most common reason for making a trip was to go from home to work or from work to home. Slightly more than 50 percent of all trips are of this home-based work type. The second most common trip purpose (at 17.5 percent) is home-based other--a category that includes trips made for shopping, medical/dental, and social/recreation purposes have one end at the home. The remaining home-based trip category, home-based school, accounted for somewhat more than 10 percent of all trips. (In comparison, over 25 percent of the trips made on the Green Line are home-based school. This result is not unexpected, given the number of schools and universities that are within the market area of the line.) The final category is nonhome-based trips, which have neither end at home and includes such trips as from work to a medical appointment, from work to shopping, from shopping to social/recreational, etc. This type of trip accounted for about 15 percent of all trips.

As one would expect, the proportions by trip purpose vary according to the time of day. However, as seen in Figure IV-2, home-based work trips are the dominant trip purpose in all but the midday (9:00 A.M. to 3:00 P.M.) time period. In this period, there is an almost even distribution of trips among home-based other, nonhome-based, and home-based work. Approximately 3 out of every 4 home-based work trips occurred during the combined morning and evening peak periods. As one might also expect, home-based other trips showed their largest share in the evening (6:00 PM to midnight) period, when they almost equalled home-based work trips.



TRIP PURPOSE DISTRIBUTION
ENTERING PASSENGERS
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

FIGURE
IV-1



TEMPORAL DISTRIBUTION OF TRIP PURPOSE
BY BROAD TIME PERIODS
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

FIGURE
IV-2

Nonhome-based trips represented a significant proportion of trips made during the midday time period. Most of these trips have at least one end at the work place (e.g., traveling from work to a medical or dental appointment or to go shopping). Another common type of nonhome-based trip is traveling from school to work or vice versa.

b. FARE PAYMENT METHOD

The distribution of fare payment methods among categories is presented in Table IV-16. The most common fare payment methods were the full adult cash fare and the prepaid pass. The expanded survey results show that almost 80 percent of rapid transit patrons paid a full cash fare, while slightly less than 15 percent used a prepaid pass. As one would expect, the type of fare paid also varied by time of day. Fare payment by prepaid pass as a proportion of all fare payments was highest during the morning and evening peak periods (approximately 20 percent and 17 percent, respectively) and lowest during the midday period. Fare payment by full cash fare as a proportion of all fare payments was highest during the evening period (over 80 percent). The handicapped half-fare category accounts for less than one-half percent of all daily fares.

c. FREQUENCY OF USAGE

Table IV-17 shows how frequently riders used the rapid transit system. More than 50 percent of all passengers used the system more than five times per week, while 10 percent used it once per week or less. As would be expected, auto ownership influenced frequency of use to some degree; e.g., as auto ownership increased, frequency decreased. For example, approximately two-thirds of all riders from autoless households used rapid transit more than five times per week, whereas about one-half of riders from one car, two car, and three or more car households use the system that often. As the opposite end of the spectrum, about one in twenty riders from autoless households use the transit system as little as once per week, whereas one in seven riders from households owning three or more automobiles used the system that infrequently.

d. MODE OF ACCESS

Walking and taking a bus were the most common modes of access to boarding stations, as shown by the figures in Table IV-18. Systemwide, three of every five passengers walked to the station of boarding, while one in four arrived by bus or streetcar. Overall, about one in ten arrived by auto--about 6 percent as auto drivers and about 4 percent as auto passengers. Of those who did drive, one in five parked on the street.

2. Corridor/Line Segment Travel Characteristics of Passengers

Of the travel information that has been presented for the MBTA rapid transit system as a whole, mode of access has been selected for detailed presentation at the corridor/line segment level. In addition, an analysis of trip destination by corridor/line segment of boarding is presented.

Fare Category	Expanded Survey	
	Number	Percent
Full Cash Fare	281,836	79.2
Prepaid Pass	51,060	14.4
Student Half-Fare	9,032	2.5
Elderly Half-Fare	12,439	3.5
Handicapped Half-Fare	1,265	0.4
TOTAL	355,632	100.0

DISTRIBUTION OF FARE PAYMENT METHODS
COMPOSITE SURVEY DAY
EXPANDED PASSENGER SURVEY RESULTS
MBTA Rapid Transit Passenger Data Collection Program

TABLE
IV- 16

Frequency of Use Per Week	Expanded Survey	
	Number	Percent
Once per week or less	37,011	10.3
2-3 times	42,435	11.9
4-5 times	81,451	22.8
More than 5 times	196,662	55.0
TOTAL	357,559	100.0

FREQUENCY OF RAPID TRANSIT USAGE
EXPANDED PASSENGER SURVEY RESULTS
MBTA Rapid Transit Passenger Data Collection Program

TABLE IV-17

Access Mode to Boarding Station	Expanded Survey Number	Percent
Walked	232,056	64.2
Drove car	23,714	6.6
Rode in car	13,117	3.6
Taxi	1,251	0.4
Commuter train	7,558	2.1
Bus or streetcar	83,451	23.1
Subway	129	0.0
TOTAL	361,276	100.0

ACCESS MODE TO ORIGIN STATION
EXPANDED PASSENGER SURVEY RESULTS
MBTA Rapid Transit Passenger Data Collection Program

TABLE IV-18

a. NORTH SHORE/BLUE LINE

The North Shore/Blue Line includes the stations from Wonderland, in Revere, to Maverick, located on the Boston Waterfront in East Boston. This line segment serves three different types of markets, which are inner city neighborhoods, older urban areas, and suburban areas.

The modes of access of those riders who used this line are shown in Figure IV-3. Walking and feeder bus were the most significant modes of access at every station except Wonderland, where almost 70 percent arrive by car. Substantial proportions of boarders also arrived by automobile at the other stations along the outer portion of the line.

b. NORTHERN/ORANGE LINE

The Orange Line North of the Northern Corridor includes the stations from Oak Grove to Community College and serves both the older urban area of Charlestown and the suburban communities of Malden, Medford and communities northward to the New Hampshire state line.

The modes of access of the users of this line segment are detailed in Figure IV-4. Large proportions of both Oak Grove and Wellington users accessed by automobile. Bus access was particularly significant at three stations--Malden, Wellington, and Sullivan--and, at Sullivan, was used for a majority of all trips. The walk mode predominated at both Malden and Community College stations.

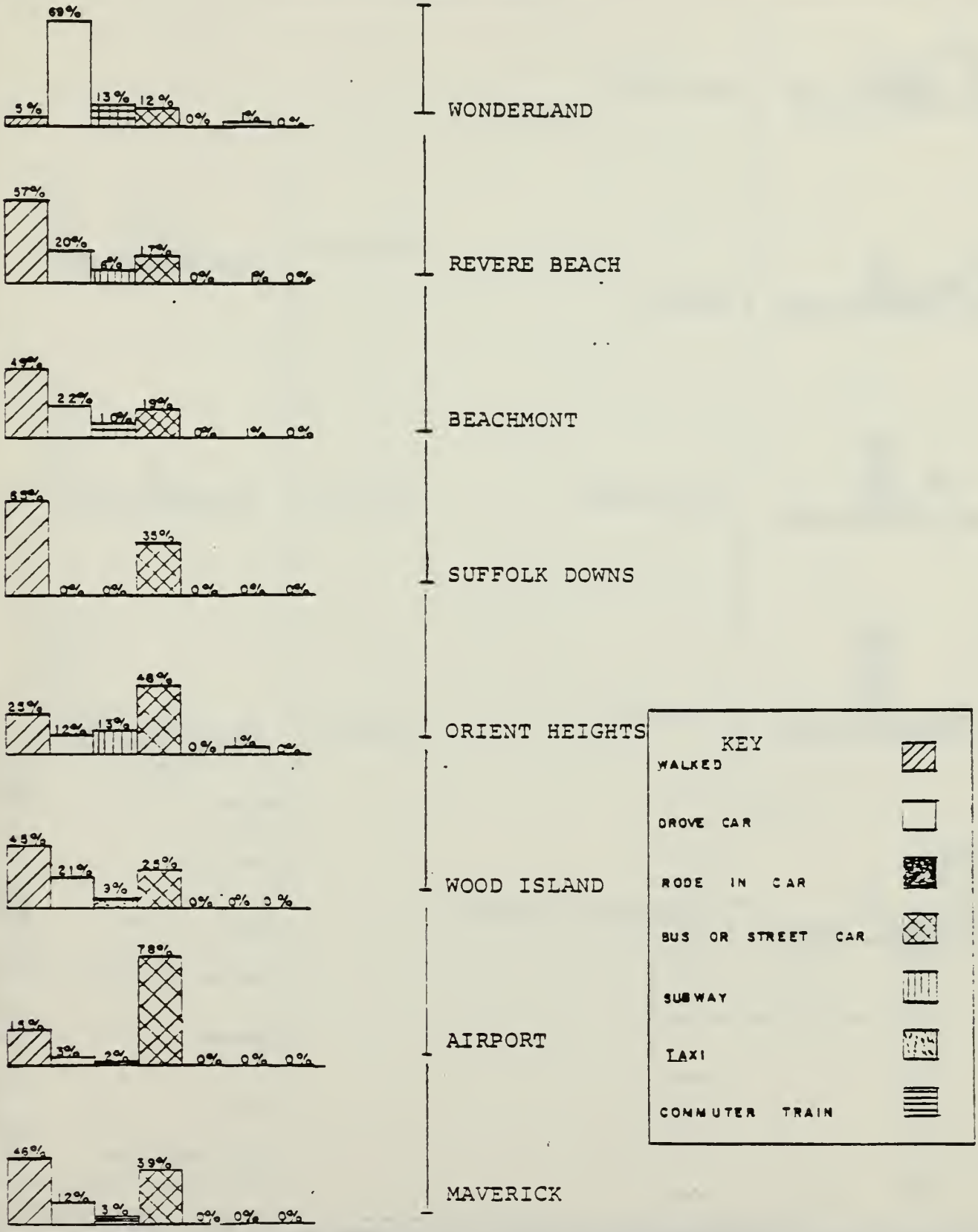
c. NORTHWEST/RED LINE

This segment includes the stations from Harvard Square to Kendall Square. It serves the City of Cambridge and other suburban communities, such as Arlington, Belmont, and Watertown, to the north and west.

The modes of access are shown in Figure IV-5. Walking was the predominant access mode at all three stations along this line segment. At Harvard Square Station the feeder bus mode was also particularly significant. The lack of parking availability, either in lots or on streets adjacent to the stations, resulted in automobile access being significantly lower than in most other corridors.

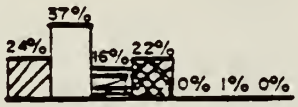
d. NORTHWEST/GREEN LINE

Rapid transit service is also provided to a portion of the Northwest Corridor by the Central Subway's Lechmere terminal, which is located in eastern Cambridge. The modes of access of this segment (station), given in Figure IV-6, were rather atypical of an outlying corridor station. Over 85 percent of boarders arrived by either walking or by feeder bus service.



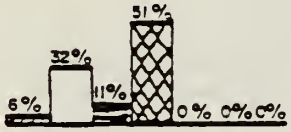
MODE OF ACCESS TO STATIONS
NORTH SHORE/BLUE LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV-3

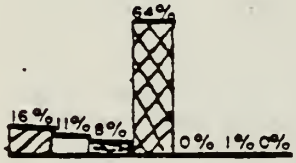


OAK GROVE

MALDEN



WELLINGTON



SULLIVAN

COMMUNITY COLLEGE

KEY

WALKED

DROVE CAR

RODE IN CAR

BUS OR STREET CAR

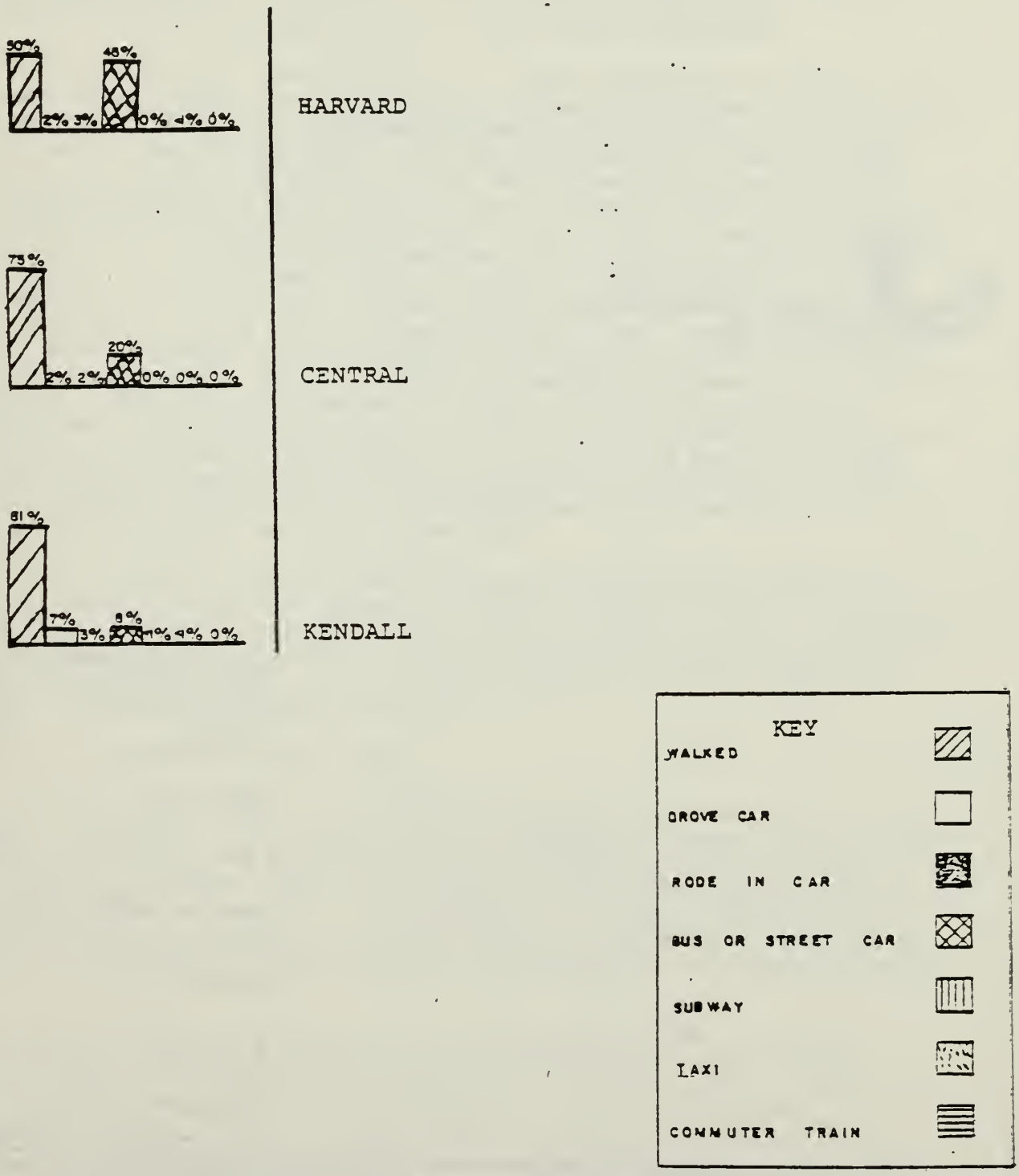
SUBWAY

TAXI

COMMUTER TRAIN

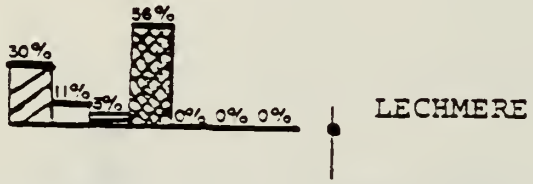
MODE OF ACCESS TO STATION
NORTHERN/ORANGE LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV-4



MODE OF ACCESS TO STATIONS
NORTHWEST/RED LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV- 5



KEY

WALKED

DROVE CAR

RODE IN CAR

BUS OR STREET CAR

SUBWAY

TAXI

COMMUTER TRAIN

MODE OF ACCESS TO STATIONS
NORTHWEST/GREEN LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure
IV-6

e. WESTERN/GREEN LINE

The Green Line, which is the most complex of the four rapid transit lines, has four segments. These are the Central Subway, the Boston College Branch, the Cleveland Circle Branch, and the Riverside Branch. A portion of the Central Subway segment and all of the three branches lie in this travel corridor.

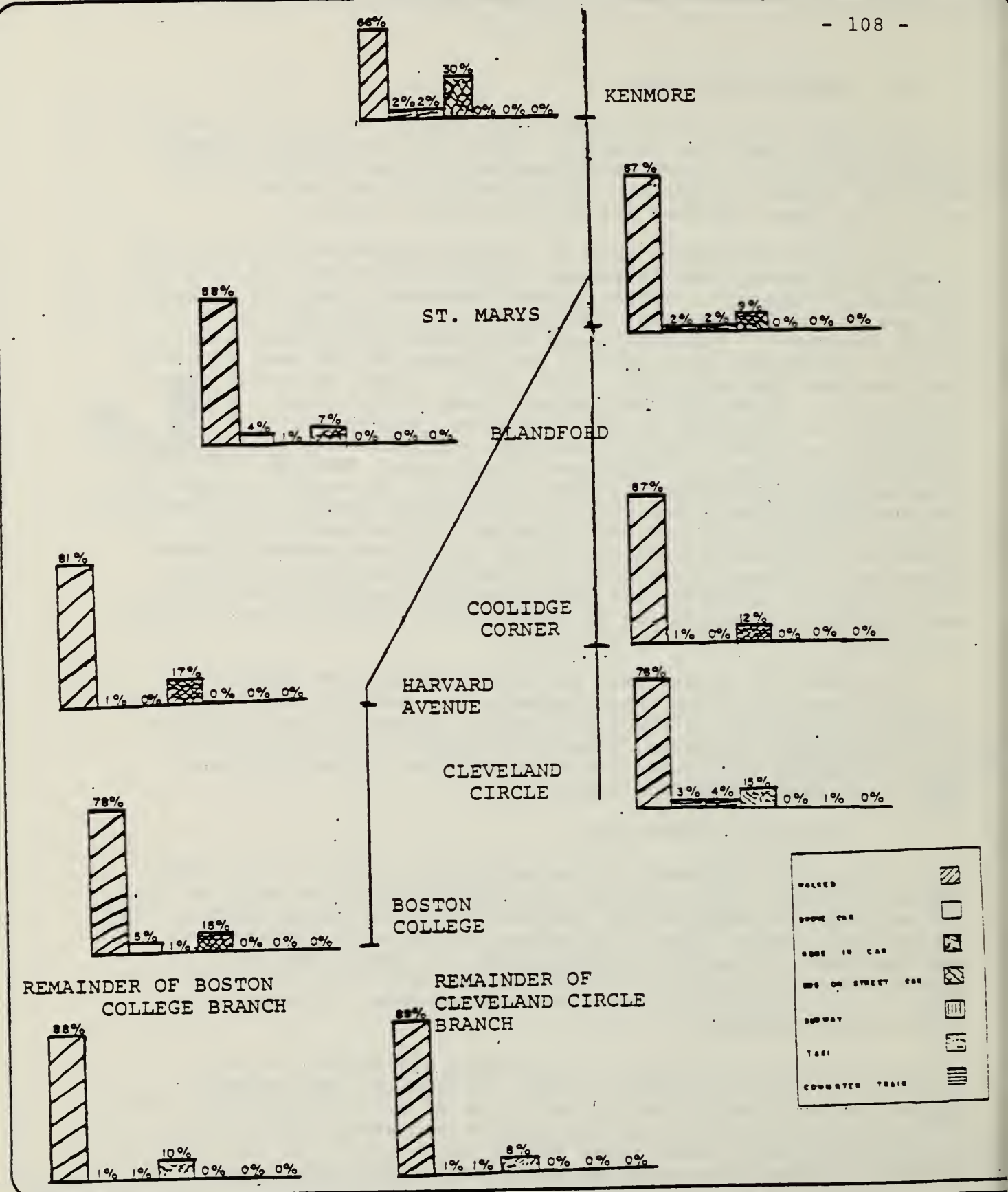
The Riverside Branch runs on a grade-separated private right-of-way from Fenway Park in Boston, through Brookline, to Route 128 in Newton. This route attracts some passengers from the colleges located in the Fenway area, but the majority are Brookline and Newton residents. One should not that Riverside Station also attracts passengers from many of the suburbs to the west of Boston. The Cleveland Circle Branch starts at the Brookline-Boston border and runs on a center-of-road median along Beacon Street, through Brookline, to Cleveland Circle in Boston. The majority of passengers on this route are Brookline residents who live in apartment buildings in the Beacon Street area. However, the route also attracts some Boston College and Boston University students. The Boston College Branch starts at Blandford Street and Commonwealth Avenue in Boston and runs over a center-of-road median along Commonwealth Avenue to Boston College on the Boston-Newton border. Riders are attracted from Boston University and Boston College dormitories, classrooms, and administrative buildings; from the many apartment buildings in the Commonwealth Avenue area; and from other sections of the City of Newton.

The modes of access used by those who board at selected stations that lie along these segments are detailed in Figures IV-7 and IV-8. Walking was the major mode of access to most stations on all segments. However, several stations on each segment had significant bus access and the outer portion of the Riverside Branch had high automobile usage.

f. SOUTHWEST/ORANGE LINE

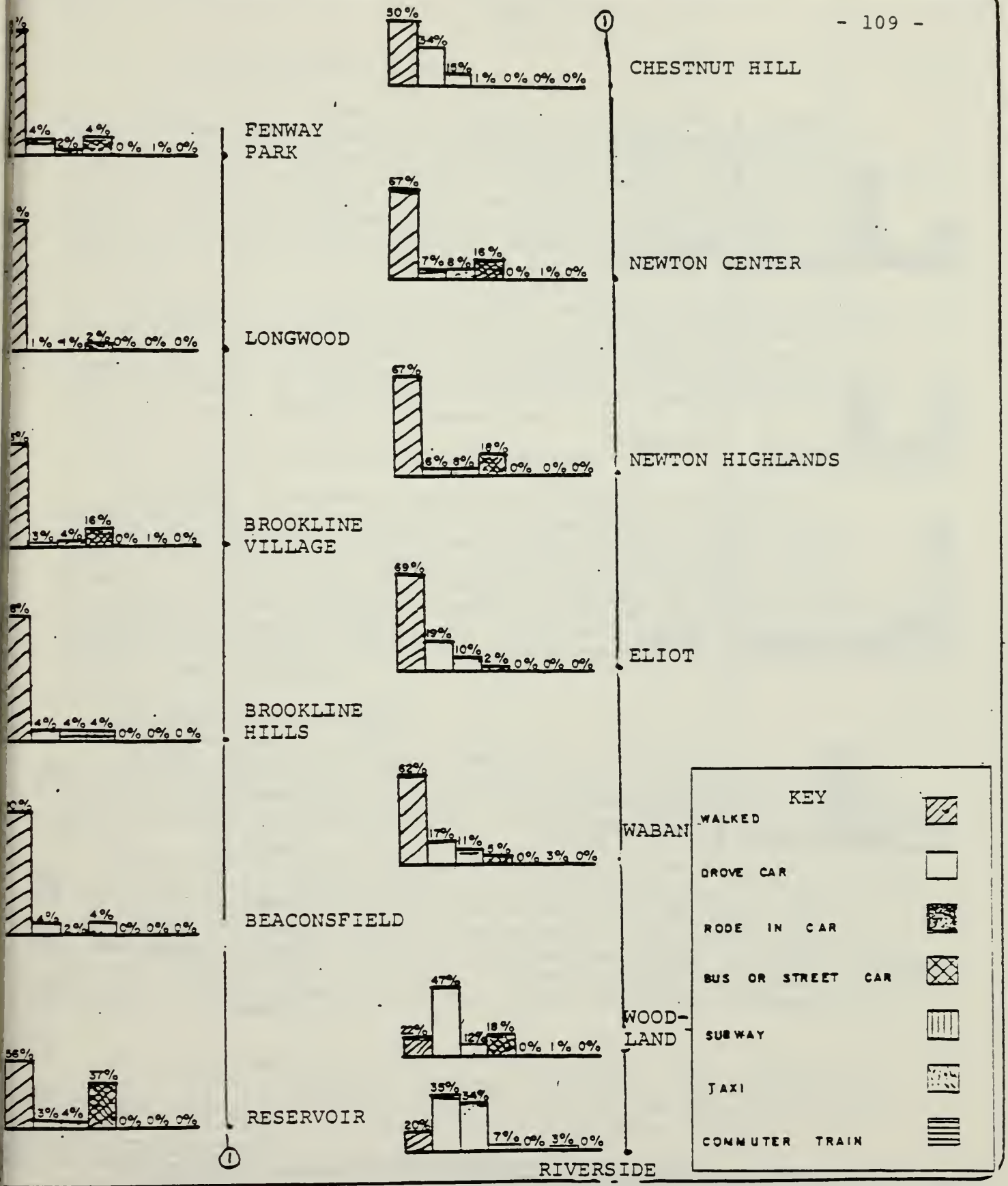
The southern segment of the Orange Line lies in this radial travel corridor. The corridor/line segment includes stations from Forest Hills at the southern terminus to Dudley Street just outside of Downtown Boston. The line segment serves mostly inner city neighborhoods. However, a large number of people who board at Forest Hills station are from communities substantially south and west of the station and therefore have somewhat different mode of access characteristics.

As depicted in Figure IV-9, walking and feeder bus were the predominant modes of access at most stations of this segment. Feeder bus was used by about two-thirds of all entering passengers at both Dudley and Forest Hills station and about one-half at Egleston station. Auto access was sigificant only at Forest Hills station, reflecting the large market area served by the station.



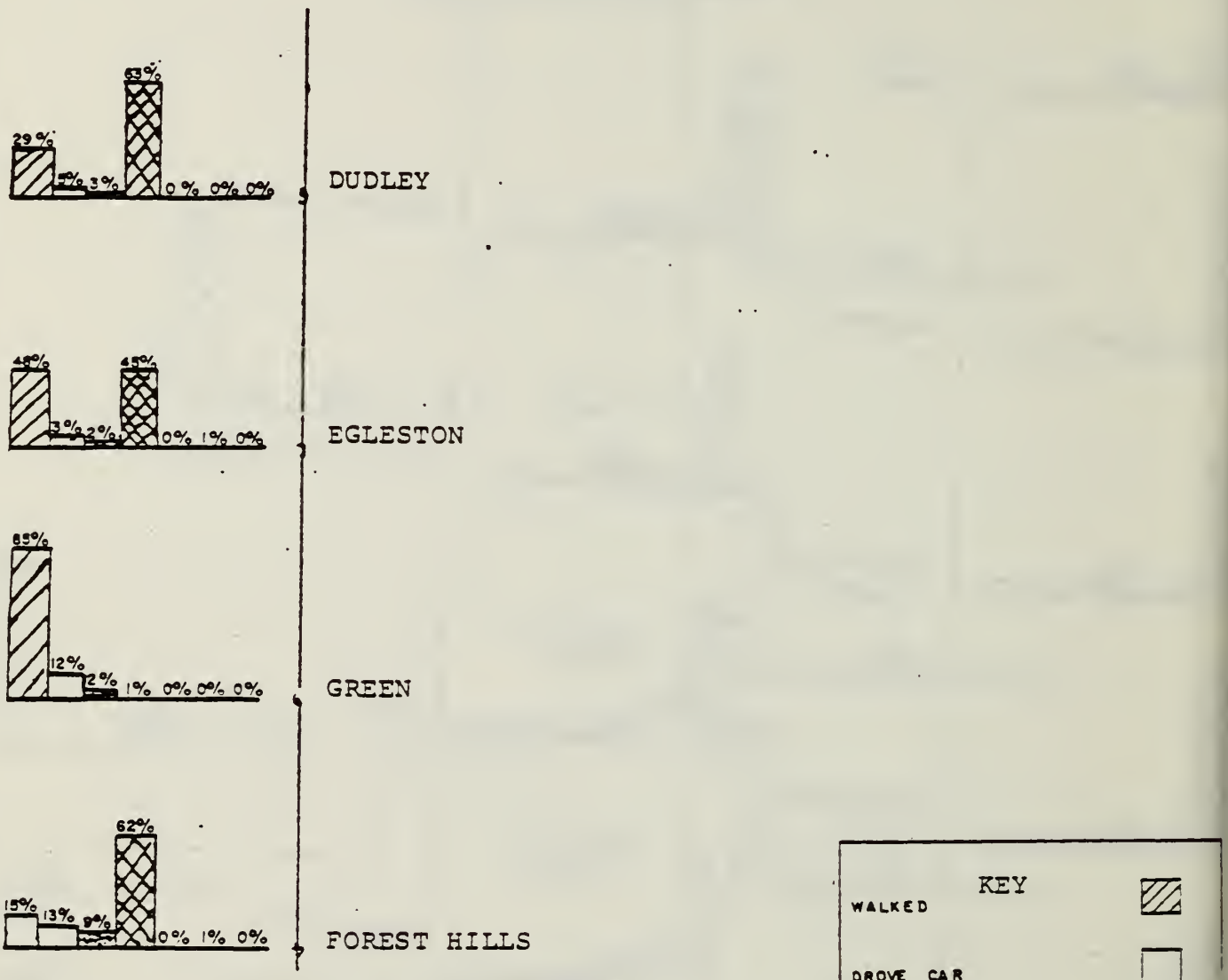
MODE OF ACCESS TO STATIONS
WESTERN/GREEN LINE - CENTRAL SUBWAY, BOSTON COLLEGE AND CLEVELAND CIRCLE BRANCHES
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV- 7



MODE OF ACCESS TO STATIONS
WESTERN/GREEN LINE - RIVERSIDE BRANCH
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV-8



MODE OF ACCESS TO STATIONS
SOUTHWEST/ORANGE LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV- 9

g. SOUTH SHORE/RED LINE

The South Shore/Red Line includes three separate segments: the Red Line Stem, composed of Broadway and Andrew Stations; the Ashmont Branch, composed of stations from Ashmont to Columbia, inclusive; and the Quincy Branch, composed, at the time of surveying, of three Quincy stations. The Stem and the Ashmont Branch serve mostly inner city neighborhoods, although Ashmont Station itself does attract riders from suburban communities. The Quincy Branch served the City of Quincy and South Shore suburban communities.

The modes of access of those who used the different segments are presented in Figure IV-10. Walking and feeder bus were the predominant modes of access to the stations along the Stem and the Ashmont Branch. Walking and the automobile were the predominant modes of access to the Quincy Branch stations--except Quincy Center, where they were exceeded by feeder bus.

h. DOWNTOWN BOSTON/DOWNTOWN STATIONS

The modes of access of riders who boarded the system at stations within Downtown Boston are presented in Figure IV-11. As would be expected, walking was the predominant access mode at almost all stations and reached effectively 100 percent at several. At North and South Stations this dominance was broken by transfers from commuter railroad. Commuter bus service was also significant at South Station and at Haymarket. Bus service also provided the required access to a small segment of the market of several other stations.

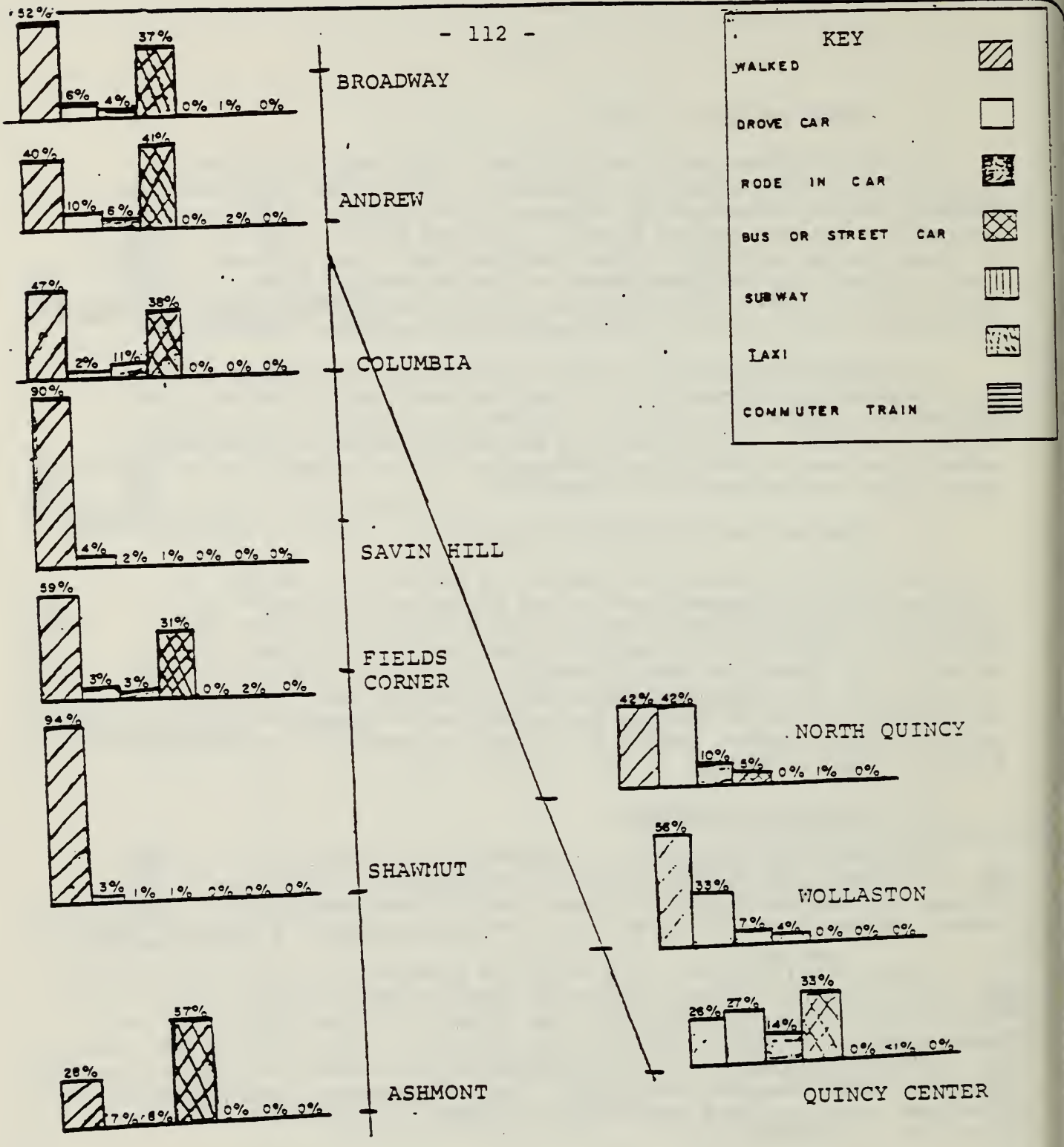
3. Trip Destination Summary

In this final subsection, the reader's attention is focused on travel originating in the outlying radial corridors as it converges on Downtown Boston to find its ultimate destination or else passes through to a destination in one of the other corridors.

Figure IV-12 through Figure IV-18 present the trips originating in each of the corridors during the morning peak period (6:00 A.M. to 9:00 A.M.). In these figures, the volume of trips is plotted as a band around the rapid transit line segments. The width of the band at the edge of Downtown Boston indicates the number of boarding passengers who have reached that point. As one proceeds into and through the Downtown area the band decreases in width as riders disembark or transfer to another line.

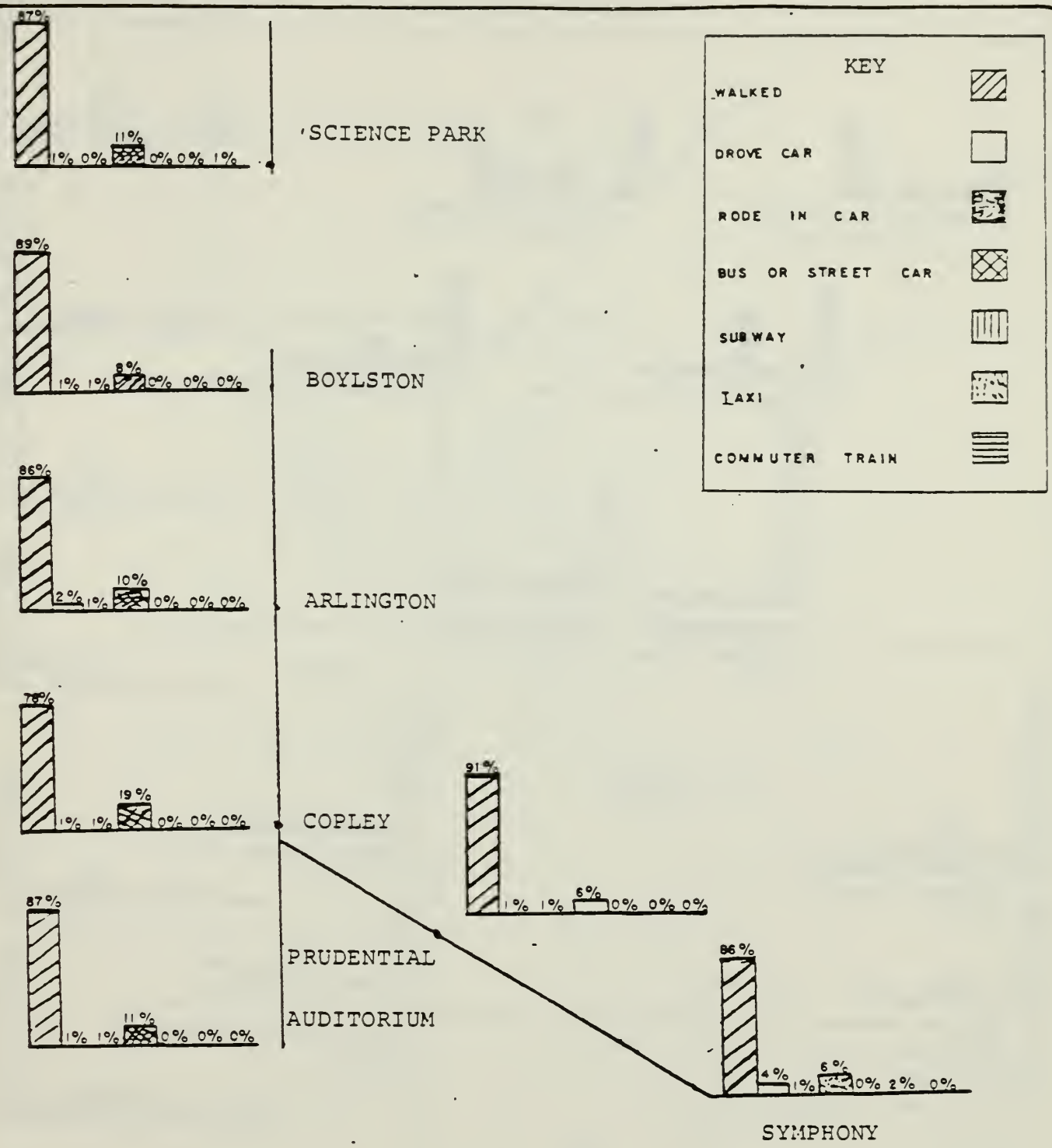
The majority of passengers entering on all lines exited the system in Downtown Boston. However, a portion of passengers did continue beyond the Downtown area, either on the original entering line or following a transfer to one or more other lines.

A further analysis of the activity within Downtown Boston is shown in Table IV-19, which presents the number of composite survey day trips, by corridor/line segment of origin, that disembark or transfer from that line segment in Downtown Boston. Approximately one-third of all trips disembarked directly form their line of origin in Downtown Boston, while another one-quarter transferred to another line.



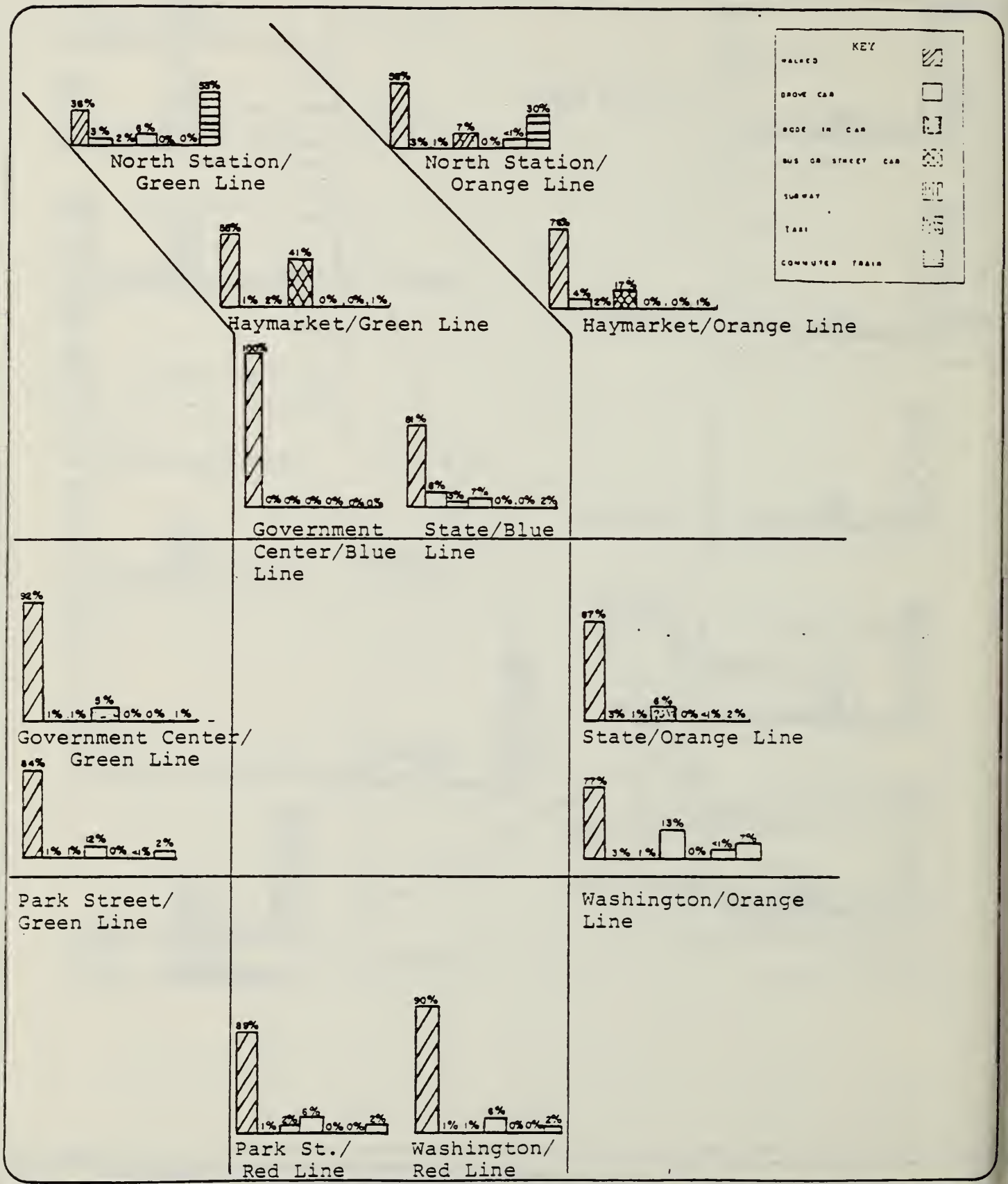
MODE OF ACCESS TO STATIONS
SOUTH SHORE/RED LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV- 10



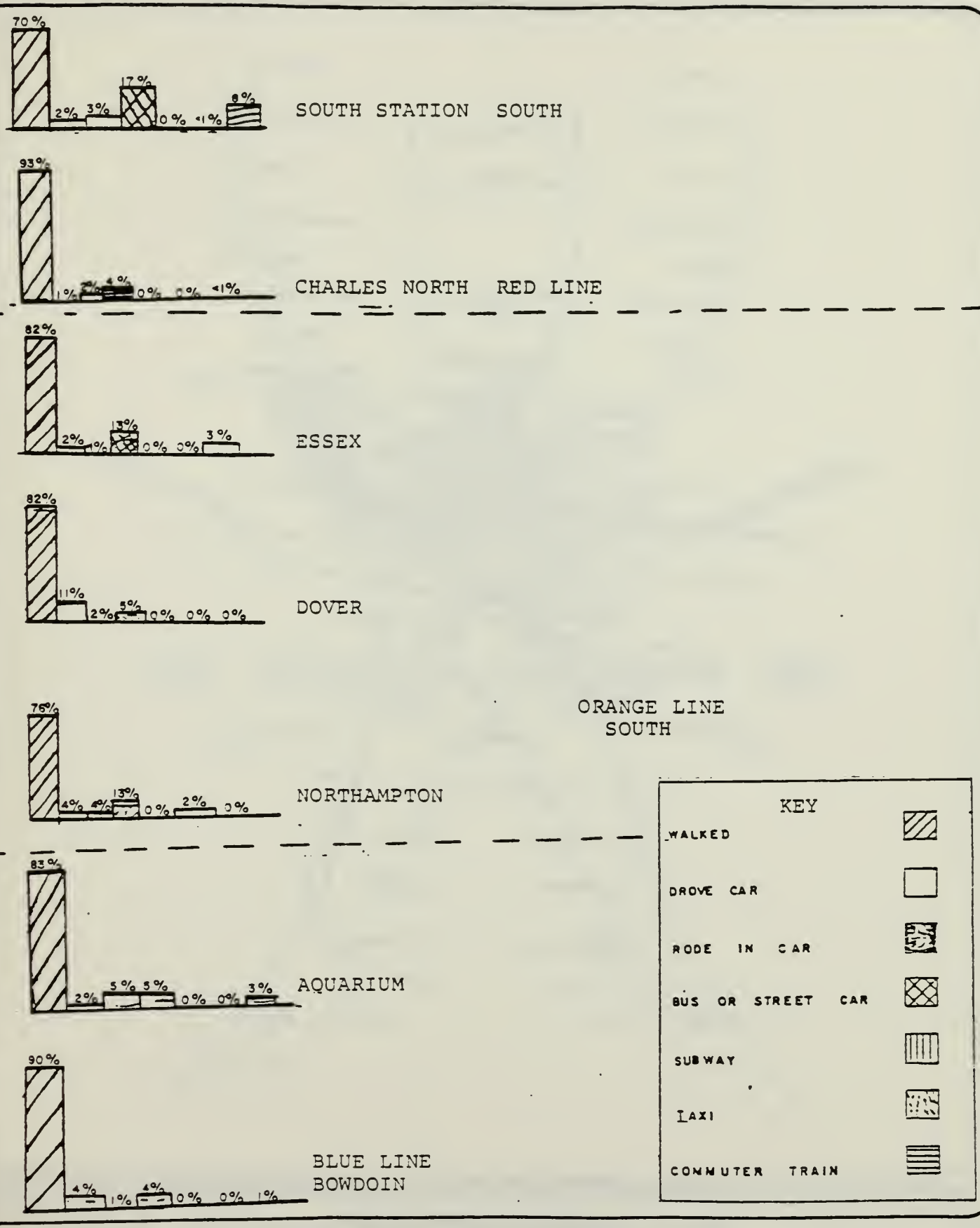
MODE OF ACCESS TO STATIONS
DOWNTOWN BOSTON/DOWNTOWN STATIONS
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV-11



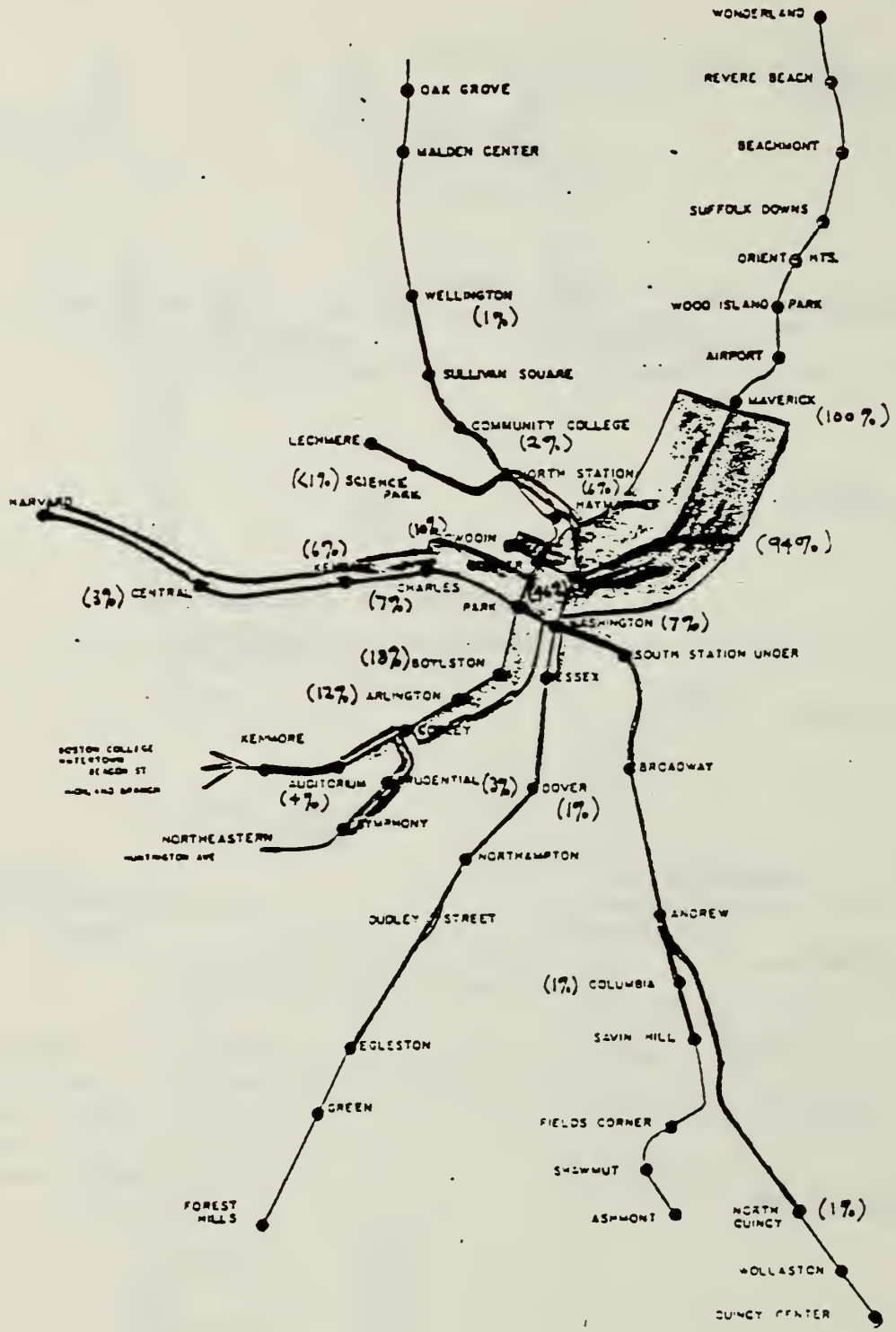
MODE OF ACCESS TO STATIONS
DOWNTOWN BOSTON/DOWNTOWN STATIONS
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV-11 (Continued)



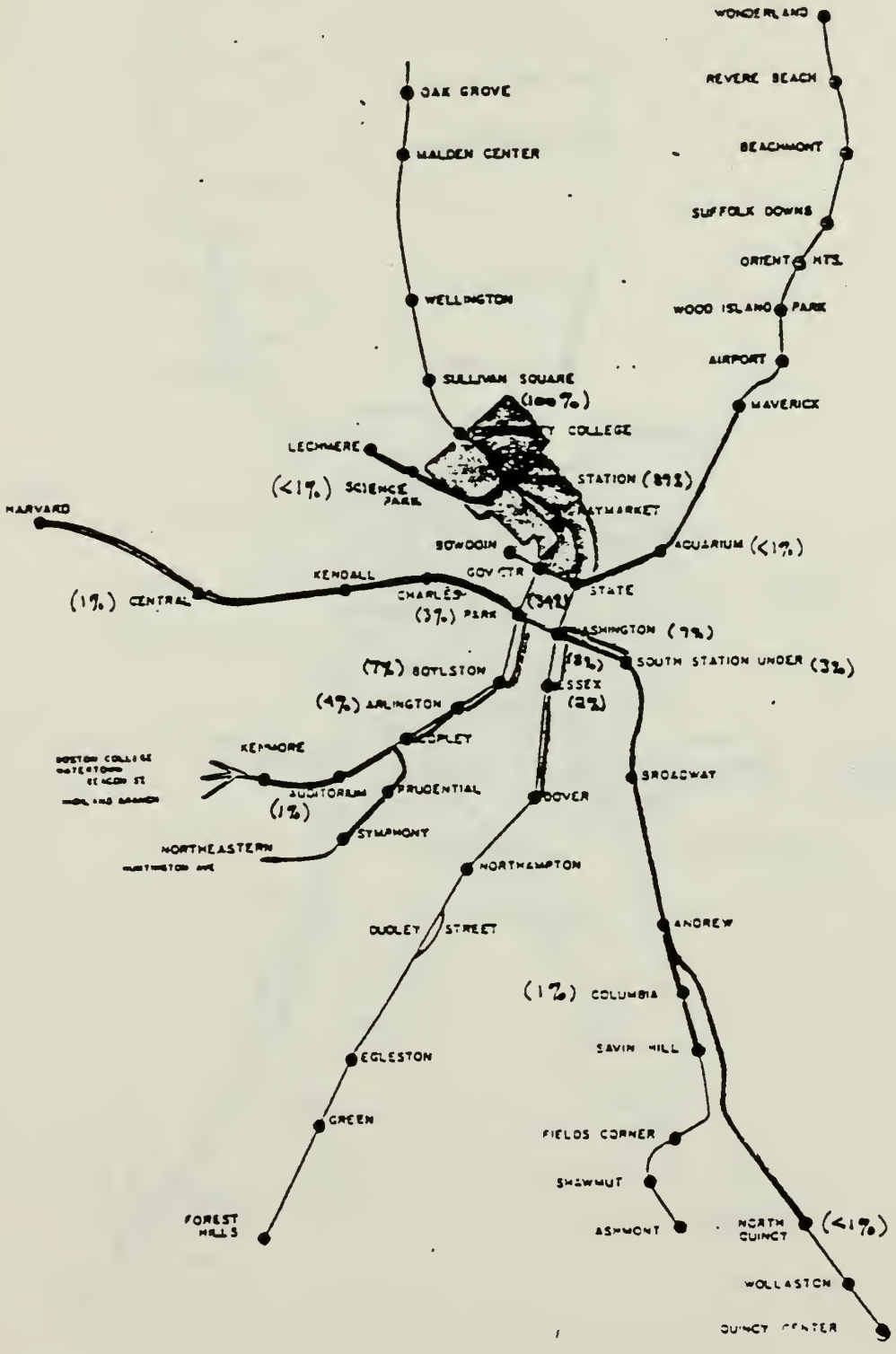
MODE OF ACCESS TO STATIONS
DOWNTOWN BOSTON/DOWNTOWN STATIONS
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV-11 (Continued)



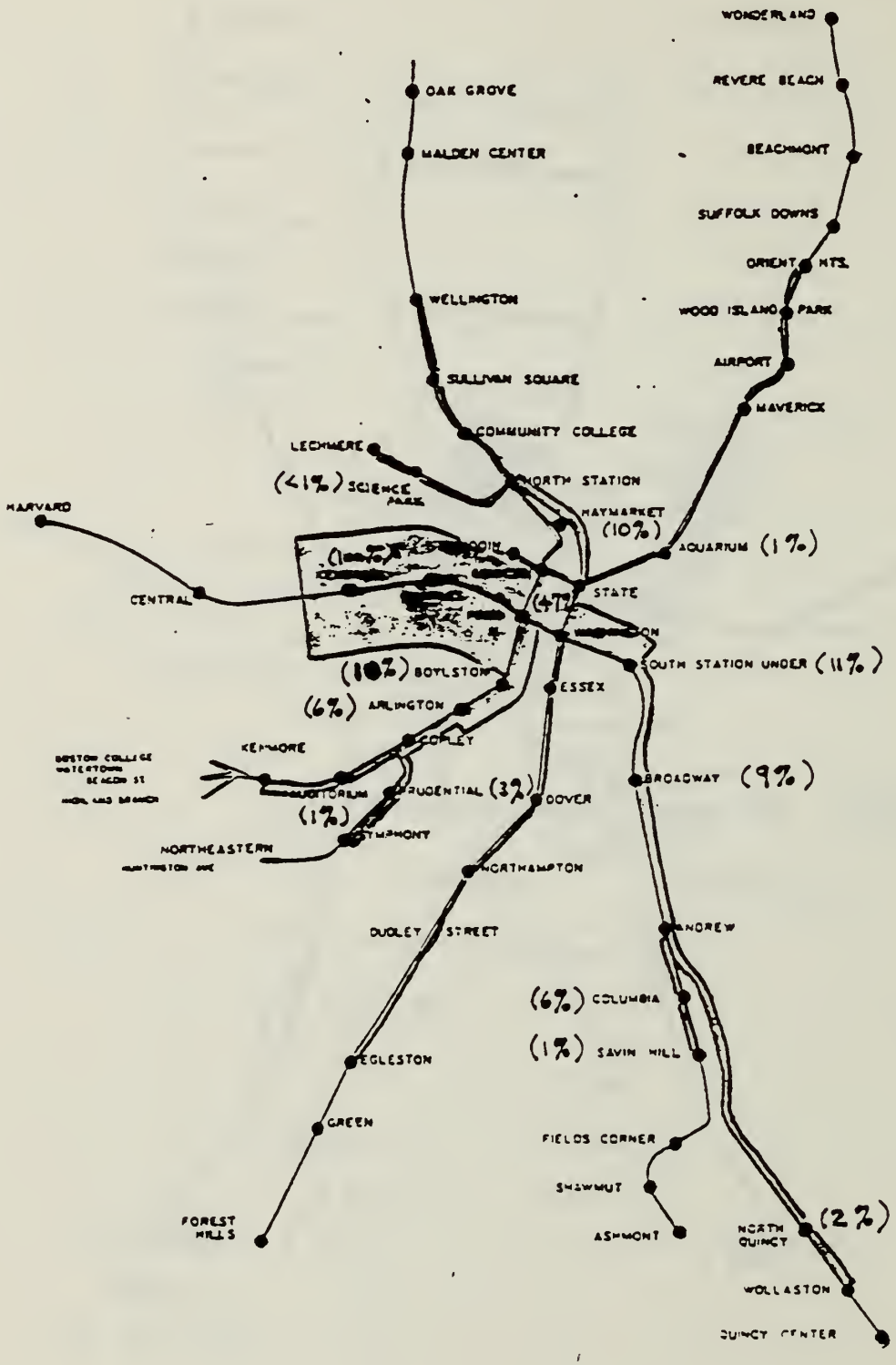
TRIPS ENTERING DOWNTOWN BOSTON
NORTH SHORE/BLUE LINE ORIGINS
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV-12



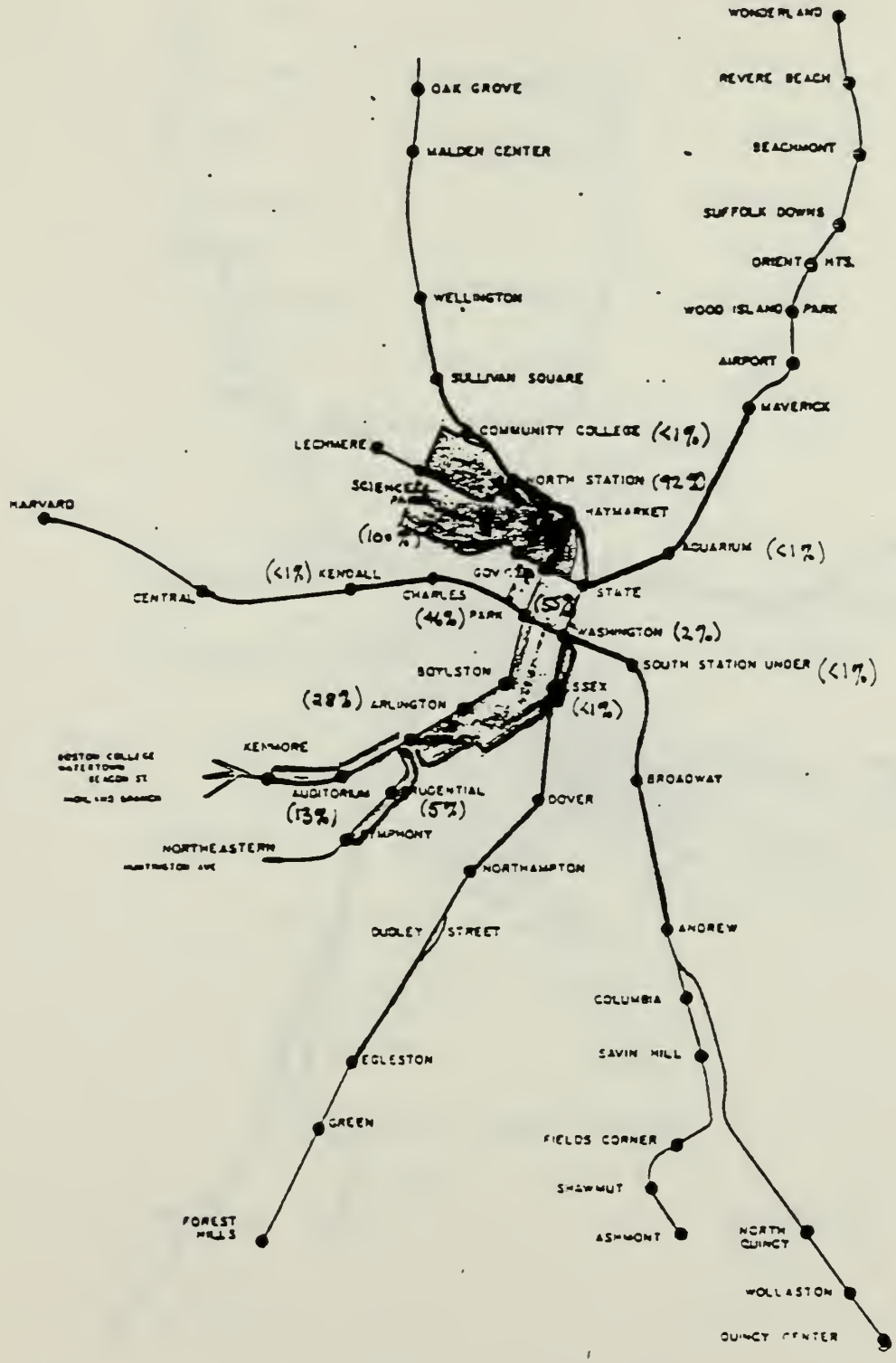
TRIPS ENTERING DOWNTOWN BOSTON
NORTHERN/ORANGE LINE ORIGINS
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV-13



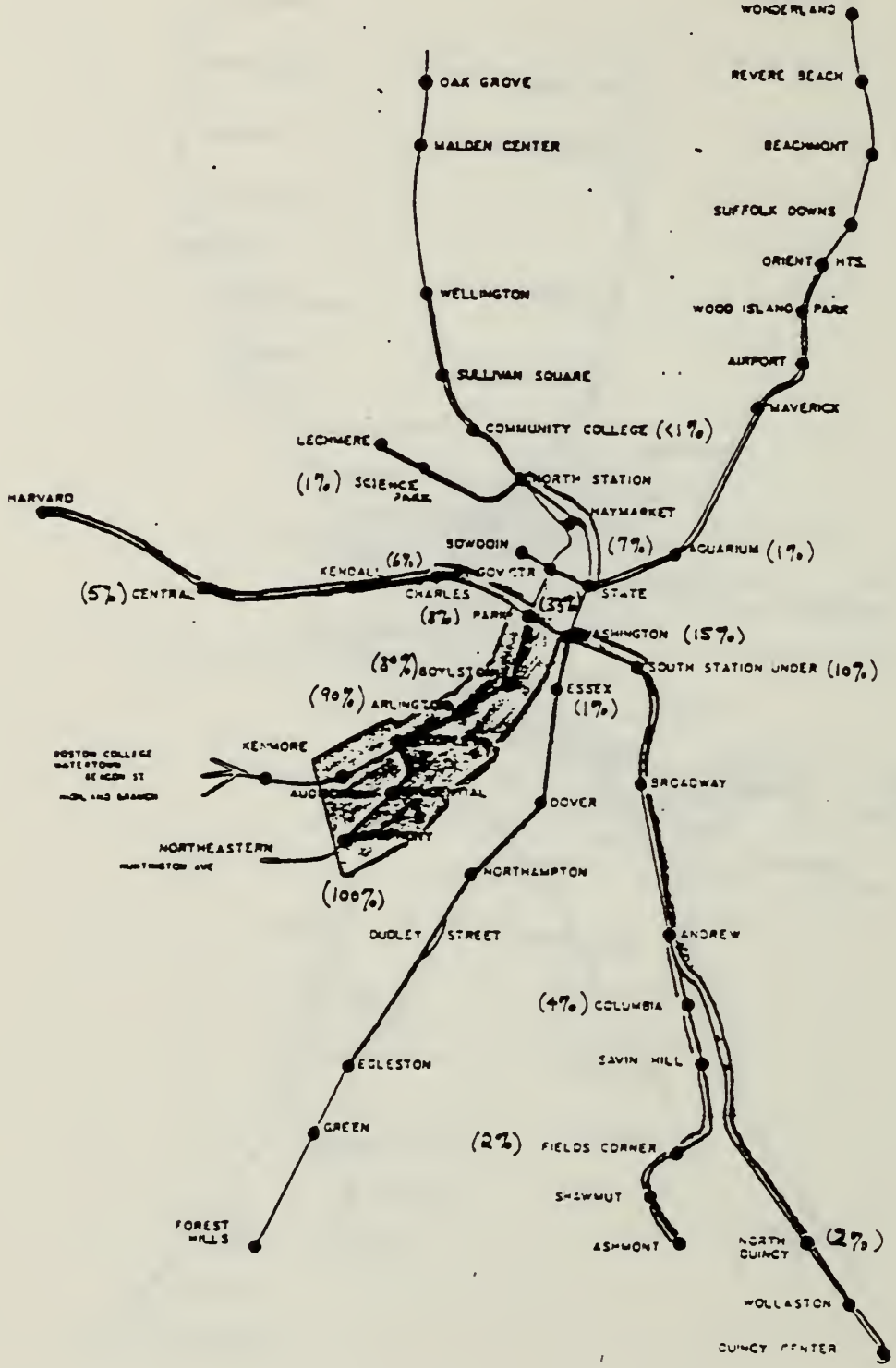
TRIPS ENTERING DOWNTOWN BOSTON
NORTHWEST/RED LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV-14



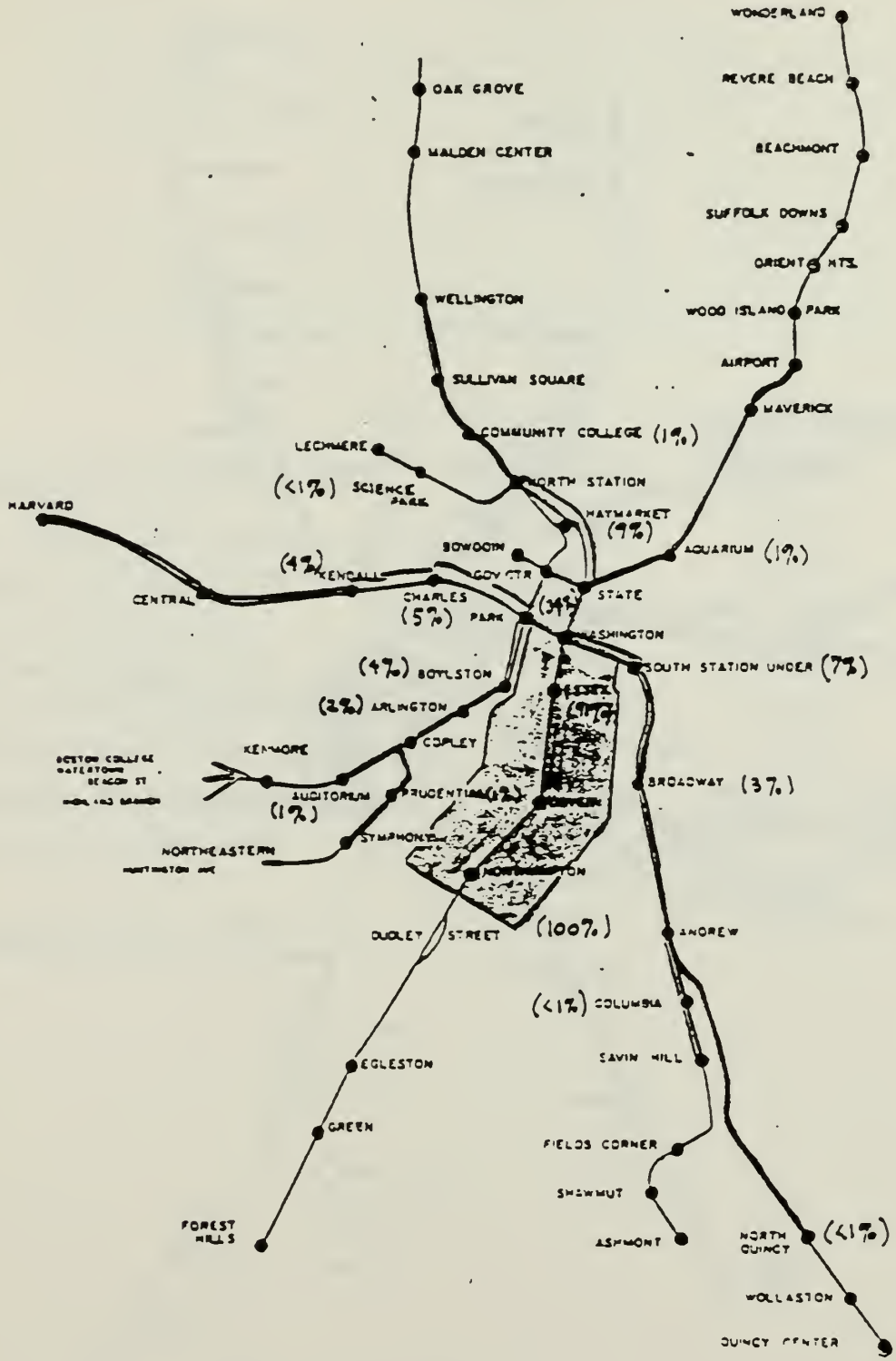
TRIPS ENTERING DOWNTOWN BOSTON
NORTHWEST/GREEN LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV-15



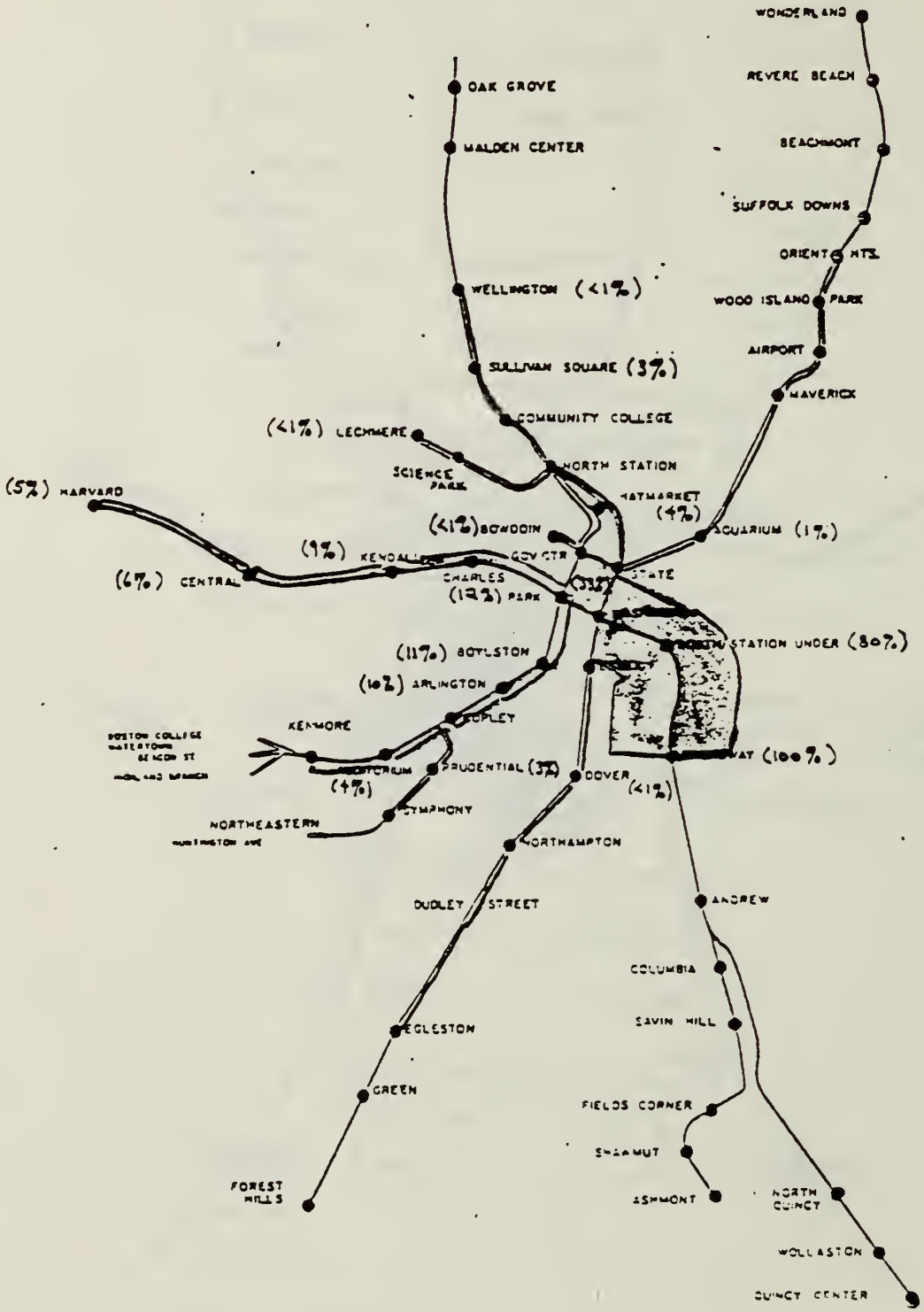
TRIPS ENTERING DOWNTOWN BOSTON
WESTERN/GREEN LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV-16



TRIPS ENTERING DOWNTOWN BOSTON
SOUTHWEST/ORANGE LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV-17



TRIPS ENTERING DOWNTOWN BOSTON
SOUTH SHORE/RED LINE
COMPOSITE SURVEY DAY
MBTA Rapid Transit Passenger Data Collection Program

Figure IV-18

Corridor/Line Segment Name	Total Boardings	Downtown Boston Activity	
		Disembark	Transfer
North Shore/Blue Line	18,264	6,917	6,995
Northern/Orange Line	19,521	9,942	5,702
Northwest/Red Line	37,783	12,097	9,115
Northwest/Green Line	6,406	2,730	811
Western/Green Line R.T.	9,473	2,454	2,764
Western/Green Line, Surface	40,259	9,047	7,114
Southwest/Orange Line	24,850	11,072	4,971
South Shore/Red Line	48,062	18,085	10,093
CORRIDORWIDE TOTAL	204,618	72,344	47,565

PASSENGER ACTIVITY FROM ORIGINATING LINE
DOWNTOWN BOSTON
COMPOSITE SURVEY DAY
MBTA Rapid Transit Data Collection Program

TABLE IV- 19

By corridor/line segment, the largest percentage of disembarkings were from the Northern/Orange Line, with 51 percent. The Southwest/Orange Line (45 percent) and the Northwest/Green Line (43 percent) followed behind. The lowest rate of direct disembarking within the Downtown (22 percent) was by boarders of the Western/Green Line, especially the surface operations, of which the Riverside Branch had the lowest rate.

The highest transfer rate in Downtown was the 38 percent of the North Shore/Blue Line. The Western/Green Line-Central Subway portion and the Northern/Orange Line shared second place, with 29 percent. The lowest rates were for the Northwest/Green Line and Western/Green Line, with 13 percent and 18 percent, respectively.